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ABSTRACT

Intended for elementary school teachers of reading and composition, this book assembles several articles on the reading/writing relationship that have appeared in 1982 and 1983 issues of the journal "Language Arts." The three sections of the book define the relationship between composing and comprehending, explore relevant research, and discuss the implications of this relationship to the learning and teaching processes. The 19 articles discuss (1) research on reading/writing relationships; (2) composing and comprehending as two sides of the same basic process; (3) a composing model of reading; (4) reading like a writer; (5) reading and writing as meditation; (6) children reading their own stories aloud in the classroom; (7) writing and the teaching of reading; (8) reading for style; (9) writing and reading developmental trends among low socioeconomic status children; (10) how reading affects children's writing; (11) the concept of the word in beginning reading and writing processes; (12) a theory of how children learn to read and write naturally; (13) observations of learning to read and write naturally; (14) translating children's everday uses of print into classroom practice; (15) pragmatic functions of reading and writing relationships; (16) young children solving the puzzle of reading, writing, and language; (17) reading with a sense of the writer and writing with a sense of the reader; (18) reading and writing as natural language activities; and (19) schema theory as a writing approach to reading comprehension. (HTH)

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Composing and Comprehending

Julie M. Jensen, Editor
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National Conference on Research in English
ERIC Clearinghouse on Reading and Communication Skills

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Contents

Foreword ix

Preface xi

Introduction 1

I Composing and Comprehending: Defining the Relationship 5

1. Research on Reading/Writing Relationships: A Synthesis and Suggested Directions (May 1983) 7
   Sandra Stotsky
2. Composing and Comprehending: Two Sides of the Same Basic Process (May 1983) 23
   James R. Squire
3. Toward a Composing Model of Reading (May 1983) 33
   Robert J. Tierney
   P. David Pearson
4. Reading Like a Writer (May 1983) 47
   Frank Smith
5. Reading and Writing as Meditation (March 1983) 57
   James Moffett

II Composing and Comprehending: Sampling the Research 67

6. The Author's Chair (February 1983) 69
   Don Graves
   Jane Hansen
7. Writing and the Teaching of Reading (May 1983) 77
   M. C. Wittrock
8. Reading for Style (April 1983) 85
   Elizabeth Church
   Carl Bereiter
9. Writing and Reading in the Elementary Grades: Developmental Trends Among Low SES Children (May 1983) 93
   Jeanne S. Chall
   Vicki A. Jacobs
10. How Reading Affects Children's Writing (May 1983) 105
    Barbara Eckhoff
11. Concept of Word: A Developmental Phenomenon in the Beginning Reading and Writing Processes (September 1981) 115
    Darrell Morris

III Composing and Comprehending: Learning and Teaching 125

12. Toward a Theory of How Children Learn to Read and Write Naturally (September 1982) 127
    William H. Teale
13. Observations of Learning to Read and Write Naturally (May 1981) 143
    Margot Cohn
14. Translating Children's Everyday Uses of Print into Classroom Practice (September 1982) 151
    Denny Taylor
15. Reading and Writing Relationships: Pragmatic Functions (May 1983) 155
    Kenneth Goodman
    Yetta Goodman
16. Reading, Writing, and Language: Young Children Solving the Written Language Puzzle (November/December 1982) 165
    Anne Haas Dyson
17. Reading with a Sense of Writer: Writing with a Sense of Reader (November/December 1981) 177
    Suzanne L. Holt
    JoAnne L. Vacca

18. Instructional Scaffolding: Reading and Writing as Natural Language Activities (February 1983) 185
Arthur N. Applebee
Judith A. Langer

19. A Writing Approach to Reading Comprehension—Schema Theory in Action (January 1982) 191
Dorothy Grant Hennings

Foreword

Walter T. Petty's fascinating history of the National Conference on Research in English records that the organization, when founded in 1932, was to be guided by the following purposes:

1. To emphasize relationships among listening, speaking, reading, and writing.
2. To encourage research in graduate schools by delineating problems needing investigation.
3. To publish critiques of research and to emphasize findings relevant to the improvement of instruction in the language arts.
4. To plan and sponsor meetings to evaluate annual bulletins.

It is interesting to note that as NCRE begins its second half century of existence its activities continue to reflect the original purposes of the organization. We still meet on a regular basis (currently in conjunction with the annual meeting of the International Reading Association) to discuss research and contemporary issues in English. We have expanded our efforts to disseminate research findings, to identify areas of needed research, and to demonstrate the implications of research for classroom teaching and learning by scheduling five co-sponsored programs annually which are held in conjunction with various professional conferences.

The impact of NCRE, however, is probably greatest through its publication program. Here too the organization remains true to its founders and their vision of what the organization should become. Monographs throughout the history of NCRE have played a significant role in contributing to the organization's dissemination, interpretation, and research-generation objectives.

The present volume, *Composing and Comprehending*, focuses one more time on

one of NCRE's primary purposes, as stated more than 50 years ago, that of emphasizing relationships among the language arts. Earlier NCRE monographs have stressed the theme of interrelatedness. Much has been written in NCRE manuscripts and elsewhere about ways in which the "expressive" skills of speaking and writing are alike and at the same time different from the "receptive" skills of listening and reading. In *Composing and Comprehending* Julie Jensen and an impressive team of contributors focus on a less-discussed interrelationship, that between writing and reading. In contrast to the wisdom of the past, the authors individually and collectively make a strong case for viewing reading and writing as complementary processes having much in common. Although, as Jensen points out in her preface, there is much yet to be learned about composing and comprehending and interrelationships between the two, this volume is an excellent sampling of current thinking. *Composing and Comprehending*, moreover, true to the spirit of NCRE publications, has something for everybody—theoreticians, researchers, teacher educators, graduate students, and teachers. It is a welcome addition to a long series of significant NCRE publications.

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Robert Dykstra
President, NCRE

Preface

The Educational Resources Information Center (ERIC) is a national information system operated by the National Institute of Education (NIE) of the U.S. Department of Education. It provides ready access to descriptions of exemplary programs, research and development efforts, and related information useful in developing effective educational programs.

Through its network of specialized centers or clearinghouses, each of which is responsible for a particular educational area, ERIC acquires, evaluates, abstracts, and indexes current significant information and lists this information in its reference publications.

ERIC/RCS, the ERIC Clearinghouse on Reading and Communication Skills, disseminates educational information related to research, instruction, and professional preparation at all levels and in all institutions. The scope of interest of the Clearinghouse includes relevant research reports, literature reviews, curriculum guides and descriptions, conference papers, project or program reviews, and other print materials related to reading, English, educational journalism, and speech communication.

The ERIC system has already made available—through the ERIC Document Reproduction System—much informative data. However, if the findings of specific educational research are to be intelligible to teachers and applicable to teaching, considerable amounts of data must be reevaluated, focused, and translated into a different context. Rather than resting at the point of making research reports readily accessible, NIE has directed the clearinghouses to work with professional organizations in developing information analysis papers in specific areas within the scope of the clearinghouses.

ERIC is pleased to cooperate with the National Conference on Research in English and the National Council of Teachers of English in making *Composing and Comprehending* available.

Charles Suhor
Director, ERIC/RCS

Introduction

No matter what the medium of communication, as senders of messages we are composers; as receivers of messages we are comprehenders. We can feel certain that some features of composing and comprehending are shared by all media; others are unique to a particular medium. We can speculate that learning to compose and to comprehend in one medium should help us to compose and comprehend in another.

This book is a statement on integration. Its focus is the medium of language, and within language, written discourse. Although reading and writing are emphasized, the importance of composing and comprehending oral discourse is neither ignored nor diminished in importance. Indeed, oral composing and comprehending play a far more dominant role in everyday communication than does print. Loban (1976) offered perhaps the most compelling argument to date for keeping in perspective the whole of the arts of language in his thirteen-year study of students' oral and written language development. His finding that children who excelled in one language process tended to excel in others suggests that all language processes share common roots. Still, it is not altogether clear how competence in one area of the language arts is integral to competence in another.

While many recent theorists suggest a close relationship between composing meaning as we write and as we read, we would do well to remember the significant contributions of not-so-recent theorists. Vygotsky, Rosenblatt, and others have contended for decades that our minds process sensory and symbolic experiences through personal associations and out of already developed and developing cognitive schemas. They have argued that we compose meaning, whether we are reading or writing; that we create a meaningful whole from disparate experiences, memories, associations, and data. Indeed, an awareness of ties among reading, writing, and thinking is not an invention of the current generation.

11

Despite long-standing support for integration, only recently are significant efforts being made to call into question the "conventional wisdom" about reading and writing and their teaching. That is, descriptions of the *products* of reading and writing—reading as decoded meaning, as passive, receptive, imitative; writing as encoded meaning, as active, generative, expressive—had led to views of reading and writing as requiring totally different skills and as entirely discrete *processes*. Indeed, past practice neglected to capitalize upon the activities and processes that reading and writing share. It failed to be integrative in a manner described by Moffett and Wagner:

> The best way for the receiver to learn to comprehend is to compose. Communication is a game like any other in some respects. To play well you have to play all roles in it. You cannot be a good fielder in baseball if you are not also a base runner, because to know which teammate to throw the ball to you must know what the runner is most likely to do. This is why a good theory of language arts should make clear that composition and comprehension are equal and reciprocal. Chess players role-play each other in order to read each other's mind, and that is what readers and writers have to do. A learner needs to practice all roles and relations of the communication structure. This amounts to being sender, receiver, and sometimes even subject in all kinds of discourse. (1983, pp. 10-11)

During the last decade, research and theory from a variety of language-related disciplines have contributed to a view of the composing and comprehending processes as that of actively constructing meaning in accord with one's prior cognitive, linguistic, and affective experience. Writers and readers are said to share a common goal: they must construct a coherent text. Research to date shows reading and writing as complementary processes, interrelated in ways that we do not yet fully understand.

At a November 1981 meeting of the Executive Committee of the National Conference on Research in English, members discussed emergent professional issues and concerns. Growing interest in reading/writing relationships was viewed with satisfaction and enthusiasm. As a means of further supporting that interest, Executive Committee members commissioned this book. NCRE members suggested topics and authors—most of whom are from its ranks—and followed the book through to completion. For help during the early stages I particularly remember Jim Squire, then NCRE President-elect, for an abundance of suggestions. For help during the later stages I acknowledge my friends, colleagues, and fellow NCRE members Edmund Farrell and Nancy Roser for their wise professional judgment and editorial skill.

Since the beginning of this decade a generous sample of interesting work, both theoretical and practical, on reading/writing relationships has appeared in *Language Arts*, journal of the Elementary Section of the National Council of Teachers of English. It is a segment of that work which composes this collection. One can find a range of perspectives belonging to the authors, for they wrote from the vantage point of their own thinking and research. They are, nonetheless, unified in their broad view of all of the language arts and of reading and writing as active and constructive mental processes through which we communicate by composing meaning.

The papers in the collection are organized into three overlapping categories. In Section I, "Composing and Comprehending: Defining the Relationship," five chapters attend to theory and research examining the nature of the bonds between read-

ing and writing. In the lead chapter, Stotsky synthesizes findings from correlational and experimental studies of the reading/writing relationship, speculates on the paucity of research to date, and suggests future research. Squire's paper contends that our failure to teach composing and comprehending as interrelated processes not only impedes our efforts to teach children to read and write, but also our efforts to teach them to think. Tierney and Pearson focus on the composing process. They describe planning, drafting, aligning, revising, and monitoring as tasks facing both readers and writers. Smith details the reasoning which led to his conclusion that children learn to write less as a consequence of formal instruction in writing than from learning to read in a special way—like a writer. Finally, Moffett suggests that a valuable way to approach the relationship between reading and writing is to explore the ways they influence our consciousness.

The six chapters in Section II, "Composing and Comprehending: Sampling the Research" report individual studies or single lines of investigation. Graves and Hansen, for example, use case study methodologies. They observe first-graders for two years in an effort to learn about the development of children's understanding of the relationship between reading and writing. Wittrock discusses his studies of the generative cognitive processes shared by reading comprehension and effective writing. Church and Bereiter, interested in Smith's concept of "reading like a writer," report on twelfth-graders' ability to attend to the style rather than the content of a written text. Chall and Jacobs present findings from a study of the reading and writing achievement of low socio-economic status children. Eckhoff examines children's writing and finds that it includes features of their basal reading texts. And, finally, Morris assesses young children's concept of a word in reading and writing.

Because this is a collection by and primarily for educators, all nineteen chapters could be said to fit into the final section entitled "Composing and Comprehending: Learning and Teaching." But in this section authors specifically address literacy in the home or school, theories of how children learn to read and write, factors which influence the growth of reading and writing, and reading and writing experiences in the classroom. Teale's chapter is an account of how preschool children learn to read and write without formal instruction. Cohn describes the literacy learning environment of her three- and four-year-old children, an environment which includes no "deliberate teaching" and in which reading and writing experiences occur in tandem. Taylor's chapter considers the social contexts of literacy and the need for educators to develop programs which enable students to bring their everyday experiences with print into the classroom.

Goodman and Goodman are also concerned that the school's literacy program is built on the functions served by written language in children's daily lives. The mark of a good program, they say, is one in which students actively participate in experiences which involve both reading and writing and which have personal meaning for them. Dyson argues that early writing is a vital component of the literacy learning process, because through writing children refine their understanding of the written language system. Holt and Vacca, in their belief that reading and writing are interdependent, stress the importance of readers having a sense of authorship and authors a sense of their readership. This they acquire by being both readers and writers. Applebee and Langer focus on planning and analyzing instruction in reading and

writing. Their examples illustrate the learning of new science content integrated with reading and writing experiences. Finally, Hennings provides a step-by-step procedure for teaching students to compose informational content, after which they are better able to interpret similar content written by others.

Despite a surge of interest in the relationships between reading and writing, in-depth study has only begun. As with any inchoate field, most questions remain unanswered. However, researchers, like those represented in this book, have taken an important first step by rejoining the naturally related processes of reading and writing. The function of both reading and writing is communication. Both processes require similar abilities, similar analysis and synthesis—comparing and contrasting, connecting and reevaluating—and the same weighing and judging of ideas. Though the field is in its infancy, it seems ever clearer that the more students use reading and writing together, the more they learn from them both.

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I Composing and Comprehending: Defining the Relationship

. . . we know far too little about the relationships between reading and writing. —Sandra Stotsky

. . . composing and comprehending are process-oriented thinking skills which are basically interrelated. —James R. Squire

. . . we view both reading and writing as acts of composing[,] as essentially similar processes of meaning construction. —Robert J. Tierney and P. David Pearson

. . . it could only be through reading that writers learn all the intangibles that they know. —Frank Smith

The power to modify our stream of consciousness is something reading and writing share. . . . —James Moffett

Sandra Stotsky

Research on Reading/Writing Relationships: A Synthesis and Suggested Directions

Inasmuch as reading and writing are both language processes, one can assume relationships between them. However, the exact nature of these relationships, as well as the influence of specific teaching methods and curricular activities upon their development, has not yet been determined. While a large body of research has been devoted to conceptualizing the reading process and to exploring alternative approaches to the development of reading skills, very little research in reading has examined the influence of writing instruction or writing activity on the development of reading comprehension. Similarly, while a large body of theoretical and experimental research in writing has focused on methodological issues, very little research in writing has examined the influence of reading instruction or reading experience on the development of writing ability. Moreover, studies correlating measures of reading ability or reading experience with measures of writing ability have appeared only sporadically through the years and at widely varying developmental levels.

Reasons for the relative paucity of research on the interrelation of the two major components of literacy must remain speculative. Possibly they relate to differences among researchers in their professional background and experience, in their curricular emphasis, or in their theoretical approaches; reading has usually been related to listening, and writing to speaking, rather than either one to the other. Whatever the reasons, the result is that we know far too little about the relationships between reading and writing. Further research in this area is necessary if we are to guide curriculum development in reading and writing more soundly and, hence, more effectively.

Unfortunately, there appears to be no comprehensive synthesis of the research that does exist on reading/writing relationships. A synthesis of the findings from

this research seems worthwhile for at least two reasons. First, it will sum up what we seem to know at present about those relationships. Second, it will suggest directions for further research. The purpose of this paper, accordingly, is to synthesize the findings from all the correlational and experimental studies that can be found on reading/writing relationships and to offer suggestions for further theoretical and instructional research on the nature of these relationships.

Correlational Studies

Most of the correlational studies appear to fall into one of three categories: those correlating measures of reading achievement with measures of writing ability; those correlating measures of reading experience with measures of writing ability; and those correlating measures of reading ability with measures of syntactic complexity in students' compositions.

The most extensive investigation of the relationship between reading achievement and writing ability was conducted by Loban (1963). He found a high correlation between reading scores and ratings of writing quality in the upper elementary grades and concluded that: "those who read well also write well; those who read poorly also write poorly" (p. 75). However, there were many good readers/poor writers and poor readers/good writers in his sample. In Grade 4, 20 (or 26 percent) of the 78 highest fourth grade readers were judged to be inferior or illiterate writers; 27 (or 30 percent) of the 80 lowest fourth grade readers were judged to be good or superior writers (p. 73). On the other hand, of the 123 sixth grade students judged to be in the good or superior group in writing, 19 (or 17 percent) were reading below chronological age; 20 (or 20 percent) of the 99 students judged to be in the inferior, illiterate, or primitive group in writing were reading above chronological age (p. 74). Reporting on the same students when they reached Grade 9, Loban (1966) noted that "the relationships between reading and writing become more pronounced as the years pass" (p. 82).

A number of other studies have found correlations between reading achievement and writing ability. In a study of 119 boys, 12 to 13 years old, Schonell (1942) found high correlations between measures of composition and measures of vocabulary, sentence structure, English usage, reading comprehension, spelling, and reading done (p. 354). In a study of college freshmen, Piexotto (1946) found low but significant correlations between scores on the English Essay Test, a reading test, and the verbal section of the Scholastic Aptitude Test. As reported in Meckel (1963), Diederich (1957) found that the verbal score on the Scholastic Aptitude Test was more highly correlated with teachers' ratings of students' composition skills than was any other measure. Fishco (1966), in a study of 95 seventh graders, found a significant correlation between reading comprehension scores and ratings of a sample of creative writing derived from a Creativity Scale constructed by the investigator. An examination of the girls' and boys' scores separately, however, revealed that only the girls' creative writing scores correlated significantly with reading comprehension scores. Woodfin (1968) examined the relationship between language ability, socioeconomic status, intelligence, reading level, and sex and the free writing of over 500 students in Grade 3. Writing was evaluated for effectiveness of expression and organization of ideas, number of words per composition, and

number of words written per minute. The best consistent predictors of writing quality were reading ability and language scores. In a study of superior and poor ninth grade writers, Maloney (1967) found that superior writers scored significantly higher than poor writers in tests of reading comprehension and vocabulary. In an experimental program in written composition in Grade 2, Grimmer (1970) found a significant relationship between composition quality and reading achievement. Both Calhoun (1971) and Thomas (1976) found a significant relationship between reading comprehension and writing achievement in college freshmen. M. Campbell (1976) also reported a high relationship between writing ability, the investigator's own criterion-referenced test of specific reading skills, and a standardized reading test in a study of college freshmen. D'Angelo (1977) found a significant correlation between reading scores and writing achievement as measured by the Informative Writing Scale in a study of Grade 9 students. Grobe and Grobe (1977) found that good writers had significantly higher reading scores than average writers in a study of college freshmen. In a study of fourth and sixth graders, Bippus (1977) found significant correlations between reading comprehension, productivity of writing, and certain aspects of quality of written language as judged by the use of the Diederich Scale. Baden (1981) found significant relationships between composition skills as measured by a checklist and a normed test of writing and several variables of reading ability in Grade 3 students; no significant differences were found between boys and girls. Taylor (1981) investigated the relationship of listening comprehension and reading comprehension to final course grades for 78 students enrolled in a community college composition course. Listening had no significant relationship with final course grade but reading comprehension as measured by a standardized reading test did.

A number of studies have also found a relationship between writing quality and reading experience as reported through questionnaires. In a study of 700 seventh graders in British Columbia, Monk (1958) found that good writers engaged in more leisure-time reading than poor writers. Donelson (1967), in a study of Grade 10 students, found that the effective writer, as judged by a rating of writing quality, was also apt to be a reader. Woodward and Phillips (1967), in a study of college freshmen, found that poor writers, as judged by first semester grades in composition, tended to have less reading experience in high school than good writers. Maloney (1967), in his study of Grade 9 students, found that superior writers read more frequently than poor writers and also tended to be female. Barbig (1968) found that good writers in Grades 9 and 12 did more voluntary reading than poor writers and also tended to be female. LaCampagne (1968) found that superior writers in Grade 12 had more extensive reading experiences than average writers. Thomas (1976) found positive correlations between writing achievement and the amount and diversity of reading in his study of college freshmen. Felland (1980) examined the personal and environmental characteristics of 256 superior writers and 200 average writers recommended by a questionnaire sent to English Department heads in 950 randomly selected public high schools. He found that, among many other personal and environmental characteristics, superior writers read more books than average writers.

A number of other studies have found significant relationships between read-

ing ability and measures of syntactic complexity in students' compositions. In a study of the relationship between reading comprehension and basic sentence types and structural patterns in compositions written by students in Grades 2 and 3, Zeman (1969) found that the use of compound and complex sentences increased as the level of reading comprehension increased. Evanechko, Ollila, and Armstrong (1974) examined the relationship between sixth-grade children's reading scores and syntactic measures derived from an analysis of a sample of their writing. A number of significant correlations were found; the best combination of syntactic measures to predict reading achievement was fluency, or the total number of communication units, and the use of complex syntactic structures. In a study of the relationship between reading comprehension and several grammatical variables in the writing of first, second, and third grade children, Heil (1976) found that t-unit length correlated significantly with comprehension at all grade levels. Thomas (1976) also found a significant correlation between sentence maturity and reading achievement in his study of college level students. Perron (1977), in a study of third, fourth, and fifth graders, examined the relationship between reading ability and three measures of syntactic complexity in four discourse modes. He found that, with only one exception on one measure at Grade 4, the low, medium, and high reading ability groups wrote at significantly different levels of syntactic complexity, which increased from low to high at each grade level (p. 11). Heller (1979) examined syntactic elements in the expository writing of college freshmen at two reading levels. High readers' writing was characterized by long t-units expanded through such nonclausal structures as prepositional phrases, intra-t-unit coordination of details, and passive verb phrases. Low readers produced shorter t-units, which were expanded primarily through the addition of subordinate clauses. Johnson (1980) used a free writing sample to assess relationships between syntactic writing maturity and reading comprehension in third, fourth, fifth, and sixth grade students. For the total group, all three syntactic writing measures (words per t-unit, number of words per clause, and number of clauses per t-unit) correlated significantly with one or more of the reading measures. More statistically significant correlations were found between writing measures and vocabulary than between writing measures and comprehension.

Several studies reported no positive correlations between measures of reading ability and measures of syntactic complexity in writing. Fuller (1974) reported no differences on t-unit measures in the writing of good and poor readers at the junior college level. Interestingly, each group of readers showed greater syntactic control of their written language than of their oral language when samples of their oral language were also examined. Siedow (1973), in a study of students in Grades 4, 8, and 12, found no correlations between reading achievement, as measured by performance on cloze passages written at three grade levels, and measures of syntactic maturity in the rewriting of a kernel sentence passage. Evans (1979), in a study of students in Grades 8 and 12 and in the final year of college, found an inverse correlation between reading achievement, as measured by performance on cloze passages written at three levels of syntactic complexity, and measures of written syntactic complexity based on the rewriting of a paragraph containing short, simple sentences; as scores on measures of written syntactic complexity increased, mean

cloze scores decreased. It is possible that the findings of the latter two studies may be an artifact of the cloze procedure on the syntactically manipulated reading passages that were used; moreover, it should be noted that neither study used samples of truly free writing for t-unit analyses.

In an unusual approach to investigating the relationship between reading and writing, Lazdowski (1976) correlated the reading scores of 338 students in Grades 7-13 with the scores obtained from the application of 8 different readability formulas to samples of their writing. His study was an attempt to predict reading level from writing level as defined by the score from a readability formula. He found for most formulas an overall progression in the readability level of the writing accompanying the progression in reading level, suggesting that "proficiency in writing ability reflected a corresponding degree of proficiency in reading" (p. 81).

Shanahan (1980) correlated measures of word recognition, reading comprehension, and vocabulary knowledge with t-unit length, organizational structure, vocabulary diversity, and measures of spelling in stories written by over 500 students in Grades 2 and 5. He found that reading and writing were related in different ways at different reading levels. In Grade 2, the relationship was based on word recognition and spelling ability; in Grade 5, it was based on reading comprehension and several writing variables, especially organizational structure and vocabulary diversity.

Two recent studies suggest the emergence of a new type of correlational study. These are studies examining reading and writing behaviors during the reading or composing process itself. Atwell (1981) examined the role of reading in the composing process of 10 traditional college students of above average writing ability and of 10 students identified as needing remedial writing instruction. Students wrote both with and without the texts they were writing in view. The better writers composed more coherent and organized texts under both conditions. With their texts in view, the better writers engaged in much more rereading of what they were writing than basic writers did; without their developing texts in view, the better writers were still able to produce more coherent and organized texts, suggesting their greater reliance on mental planning. Results suggest that better writers plan and reread more during the composing process than poorer writers. Birnbaum (1981) examined the reading and writing behaviors of four Grade 4 and four Grade 8 students in their free reading and during the composing process. One pattern of behaviors was associated with a higher quality of writing, and one pattern of behaviors was associated with a higher quality of reading. Students rated more proficient in one process were rated more proficient in the other. Further, the more proficient readers/writers saw themselves as good readers and writers and engaged more often in self-sponsored composing and reading than did the less proficient readers/writers.

Studies Examining the Influence of Writing on Reading

Studies examining the influence of writing upon reading may be subcategorized into two groups: those attempting to improve writing through writing instruction, with effects on reading; and those attempting to improve reading through the use of writing. Most studies in the first subcategory are recent experimental studies

examining the effects of sentence-combining practice on writing maturity, writing quality, and reading comprehension. Combs (1979) synthesized the results of these studies and concluded that the effects of sentence-combining practice on reading comprehension are ambiguous. According to his review, the results of specially designed measures are largely positive, but the results of cloze tests are varied, and standardized measures consistently show non-significant or negative differences between groups (p. 55). It should be noted that only one of these studies examined the effects of sentence-combining on students' writing vocabulary. Pedersen (1977) sought to measure increases in "lexical density" as a result of sentence-combining practice but his results are difficult to interpret.

Obenchain (1971) developed a writing program at the high school level to improve expository writing. The program taught the use of logical connectives in the writing of answers to precise essay questions on selected literature units through highly structured sentence-combining exercises. Because her program integrated reading and logical thinking with writing instruction, students were also expected to improve in their reading comprehension as well. At the end of the school year, experimental students who had experienced the program for most of the school year achieved highly significant gains over the control students on all writing measures but did not quite achieve significant gains in reading comprehension (the results were significant at the .06 level).

A number of studies, old and new, suggest the usefulness of writing activities for improving comprehension or retention of information in reading material. Newlun (1930) found that, in contrast to "ordinary ways of studying," improvement in summary writing in Grade 5 history classes for 12 weeks or less correlated with increased achievement in mastering information in history. However, he found that practice without improvement in summary writing was not particularly beneficial. In Barton's (1930) study, secondary school students were taught how to outline before undertaking study of a unit of material. By writing outlines as a regular study procedure, experimental students acquired greater knowledge in ancient history, American history, and geography than a control group. Dynes (1932) found that taking notes, outlining, and summarizing was superior to reading and rereading for immediate learning and for retention of information in high school history classes. Salisbury (1934) studied the effects of training Grades 7, 9, and 12 students in logical organization through outlining and summary writing. After 30 lessons in the English class using expository materials from a variety of secondary school subjects, experimental students made significantly greater improvement on reading tests, reasoning tests, and achievement tests in history, civics, and general science than did non-experimental students. Jencke (1935) investigated the relationship between précis writing practice and improvement in reading at the high school and college level to determine whether practice in précis writing would increase their ability "to interpret the printed page" more than free composition work would. She found some degree of superiority for précis writing, particularly on a vocabulary test and an untimed test of reading interpretation.

Nagle (1972) sought to improve both general reading comprehension and the comprehension of social studies texts through "directed writing activity" in a semester course for Grade 8 students. He found that general reading comprehen-

sion, but not social studies reading achievement, was significantly improved in the experimental groups.

Doctorow, Wittrock, and Marks (1978) found that Grade 6 students who were given paragraph headings and who wrote an original one-sentence summary after each paragraph they read in a story showed greater comprehension and recall than students who only wrote the one-sentence summary, students who only were given the paragraph headings, and students who wrote nothing and were given no cues. Taylor and Berkowitz (1980) also found that Grade 6 students who wrote a one-sentence summary after a passage from a social studies textbook did better on measures of comprehension and memory than students who used a study guide, students who answered questions after reading the passage, and students who simply read the passage.

A study by Taylor (1978) with a small group of college students found "marked improvement" in their ability to summarize adequately the intended meaning of a passage after a three-week program of instruction and practice in paraphrasing and summary writing. A more recent study by Glover, Plake, Roberts, Zimmer, and Palmere (1981) found that college level students instructed to paraphrase or write "logical extensions" of an essay they were asked to read recalled significantly more ideas from the essay than students instructed to write only key words or nothing at all while reading the essay.

Two studies suggest a relationship between note-taking and enhanced understanding and recall of information in written prose. Kulhavy, Dyer, and Silver (1975) found that high school students who took notes on a textbook passage performed significantly better than those who underlined or merely read it. Kretzing and Kulhavy (1979) found that high school students who took notes that required summarizing or paraphrasing recalled significantly more than those who took either verbatim notes, letter-search notes, or no notes at all.

In a study of the effects of teaching a reading vocabulary on the writing vocabulary of community college freshmen in a remedial reading course, Wolfe (1975) found that the practice of writing the new words in a sentence format led to better retention of the more difficult words than did just reading them in a sentence format.

Oehlkers (1971) asked whether Grade 1 children in a year-long "creative writing" program would make superior gains on word recognition tests to a group of children spending the first half of the year in a language experience approach for reading instruction and only a half-year in a creative writing program. He found no significant differences between the two groups at the end of the school year. Smith, Jensen, and Dillingofski (1971) found that two experimental groups of fourth graders assigned either a "creative" or a "non-creative" writing task as a response to three short reading selections did no better afterwards on short comprehension tests based on these stories than a control group did after only reading the stories. On the other hand, Collins (1979) found that expressive writing practice combined with reading in a semester-long course for college freshmen improved their reading comprehension significantly more than did reading instruction alone for a control group. Walker-Lewis (1981) also found that writing for both "expressive as well as receptive modes of language communication" combined with reading instruction in

a college-level reading course for academically underprepared students improved their reading comprehension significantly more than did a "traditional non-integrated" method for a control group. She also examined the effects of the program on writing ability but found no overall significant differences in the students' writing.

Studies Examining the Influence of Reading upon Writing

Studies examining the influence of reading upon writing may also be subcategorized into two groups: those attempting to improve only reading, with effects on writing; and those attempting to improve writing through reading instruction, the use of literary models, or additional reading experiences. Interestingly, no studies can be found that seem to fall in the first subcategory. The few that can be found fall in the second subcategory.

Three studies show that additional reading may be as good as, or better than, grammar study in improving writing. According to a summary by Strom (1960), a study by Clark (1935) at the college level found that students who did additional reading made more improvement in grammar and usage and "other language techniques" than did students who studied only formal grammar; a study by Bagley (1937) found that students who studied only literature wrote better compositions than did students who studied formal, traditional grammar. Elley, Barham, Lamb, and Wyllie (1976) investigated the effects of three different English programs on high school students in New Zealand, one group studying transformational grammar, a second group studying traditional grammar, and a third group having additional reading instead of grammar study. At the end of three years, the third group "demonstrated competence in writing and related language skills fully equal to that shown by the two grammar groups" (p. 18).

Several studies show that additional reading may be as good as, or better than, additional writing practice in improving writing. Heys (1962), in a year-long study in Grades 9 through 12, found that the classes that did additional reading and wrote only one paper every three weeks tended to make greater gains in writing than did classes that wrote one paper a week but read less. He concluded that reading was a positive influence on the writing ability of many students. Christiansen (1965) examined the effects of frequency of writing practice in semester-long courses for college freshmen and found no significant differences between experimental and control groups; both improved in their writing. He concluded that the additional reading assignments in the control classes were as effective in improving writing as were the extra writing assignments in the experimental classes. DeVries (1970), in a nine-week experiment with Grade 5 students, found that the students who were excused from almost all composition work and were assigned additional reading surpassed the students who wrote the equivalent of two themes a week in all aspects of writing proficiency, as measured by an evaluation of pre- and post-expository writing samples on a composition rating scale.

One study showed the benefits of using children's literature to teach composition. Mills (1974), after a four-year longitudinal study, reported that fourth grade children who read or listened to and then discussed children's literature as a springboard to writing scored significantly higher in their free writing than a con-

trol group that did not use children's literature in this manner. Writing was measured by a composition rating scale as well as by tests of capitalization, punctuation, and total language from the Iowa Test of Basic Skills. Andreach (1975) sought to develop organizational skills through the use of literary models in a semester-long course in Grade 10. He found that experimental students wrote significantly better organized compositions than did control students, although he noted that both instruction and the composition rating scale focused on organization.

There is a small group of studies that attempted to improve writing skills through reading instruction. Eurich (1931), reported in Belanger (1978), attempted to improve composition skills on the college level by teaching reading in 4 twelve-week experimental courses. Despite variations in the way he taught vocabulary and paragraph reading skills, he found no significant differences in favor of the experimental groups in either reading or writing ability at the end of the 4 courses. Mathews, Larsen, and Butler (1945) also tried to improve composition skills through reading exercises in courses for poor writers at the college level. Although the experimental groups made greater gains in reading rate and comprehension than control groups did, the control groups were judged to make greater gains in writing. Schneider (1971) found no overall significant differences between experimental and control students on measures of reading and writing after teaching composition skills through reading instruction in a fifteen-week course for remedial students at the junior college level. Calhoun (1971) sought to improve writing and "awareness of rhetorical techniques" by teaching selected reading skills through exercises and discussion in a ten-week course at the college level. Although he found a significant difference between the experimental and control groups on his test of awareness of rhetorical techniques, he found no significant differences in composition skills. Miller (1974) taught reading skills integrated with short writing assignments to remedial composition students at the college level. At the end of the semester experiment, there were no significant differences between experimental and control groups in reading comprehension, but the control groups were superior to the experimental groups on the measure of writing quality. D. Campbell (1976) found no significant differences between experimental and control students in reading or writing skills after a twelve-week course at the college level integrating writing and reading instruction in two freshman composition classes.

Maat (1977) used an experimental discourse model for reading instruction to improve the writing skills of 40 high school seniors in a nine-week course; the experimental group did no writing during the nine-week period. Although the experimental group made significant gains in reading on an experimenter-constructed test based on the discourse model, they made no significant gains in writing. Belanger (1978), seeking to determine whether significant improvement in reading comprehension would lead to improved writing ability, examined the influence of a forty-minute reading instructional treatment, called the SOS Reading Technique, on the writing ability of Grade 9 and 10 students over a six-month period. Although the students who had received the instructional treatment later achieved significantly higher scores on a standardized reading test than the students who had not received the instructional treatment, he found no significant differences between the compositions of these two groups of students by the end of the school year.

Only one study reported significant effects on both reading and writing ability. Bossone and Quitman (1976), in a study involving 71 teachers and over 2000 high school and beginning college students, examined the effects on students' expository writing of highly structured English courses which correlated reading instruction with writing instruction. Both pre- and post-reading and writing tests were given. After semester-long courses, 80 percent of the students in the experimental groups improved in their essays, while only 45 percent of the students in the control group did. On a standardized reading test, there was significant improvement within each group; at the college level, the experimental groups were significantly better than the control groups. On a curriculum-based reading assessment test, most experimental and control groups made significant gains in reading over the course of the semester; at the high school level, the experimental groups did significantly better than the control groups.

Summary and Conclusions

To summarize briefly, the correlational studies show almost consistently that better writers tend to be better readers (of their own writing as well as of other reading material), that better writers tend to read more than poorer writers, and that better readers tend to produce more syntactically mature writing than poorer readers.

With respect to the experimental studies, we find that studies that taught writing or used writing exercises primarily to improve writing and measured effects on reading did not tend to find significant effects on reading. On the other hand, almost all studies that used writing activities or exercises specifically to improve reading comprehension or retention of information in instructional material found significant gains. Depending on the length and type of study, the gains varied from better recall of specific material read to improved scores on standardized reading tests or achievement tests in academic subjects.

Studies that sought to improve writing by providing reading experiences in place of grammar study or additional writing practice found that these experiences were as beneficial as, or more beneficial than, grammar study or extra writing practice. Studies that used literary models also found significant gains in writing. On the other hand, almost all studies that sought to improve writing through reading instruction were ineffective.

Although the total number of studies in each category is small, several tentative conclusions seem possible. First, those who seek to improve reading through writing activities or writing instruction may be most successful with writing exercises that entail the reading of instructional texts. Writing instruction and writing activities designed primarily to improve free writing may have some effect on reading comprehension but, apparently, not a great one, at least in programs of one year's duration or less. Until we have stronger evidence to the contrary, it seems reasonable to conclude that writing instruction does not seem to be a substitute for reading instruction and is probably best undertaken for the purpose for which it was designed. Conversely, the use of reading instruction to improve free writing also does not seem to be effective. Therefore, it seems reasonable to conclude that reading instruction is also probably best undertaken for the purpose for which it was designed. However, from both the correlational studies and the experimental

studies, we find that reading experience seems to be a consistent correlate of, or influence on, writing ability. Thus, it is possible that reading experience may be as critical a factor in developing writing ability as writing instruction itself.

It is worth noting that most of the experimental studies examining the influence of specific writing activities on reading used reading material that was expository or informational in nature. Similarly, almost all of the experimental studies examining the influence of reading experience or reading instruction upon writing ability assessed essay writing; the only study (Mills 1974) that assessed expressive or fictional writing involved elementary grade students. Because the language of formal schooling is not a natural one but one that must be taught (Stotsky, 1983; Stotsky, forthcoming *a*), and because access to and further development of the knowledge base of a literate and highly technological culture depends upon competence in reading and writing academic discourse, it is not surprising that most of the experimental studies that examined the influence of writing and reading upon each other focused on higher educational levels and were concerned with ways in which instruction might enhance acquisition of this language.

Directions for Further Research

The nature and findings of the research to date on reading/writing relationships suggest a number of directions for further research.

First, we need research on the traits of good readers/poor writers or poor readers/poor writers. None of the correlational studies examined these populations. In what ways does the writing of good readers/poor writers differ from the poor writing of poor readers? In what ways does the writing of poor readers/good writers differ from the good writing of good readers? Clearly, it would be important for teachers to know the qualities of good writing that seem to be independent of high reading ability. An analysis of these two groups of students may provide us with more information about the nature of the relationships between reading and writing.

Second, we need measures that systematically link writing and reading to each other. Only Lazdowski's study suggested how gains in one mode may be regularly connected to gains in the other. Other approaches need to be worked out as well.

Third, we might also benefit from more research along the lines of Shanahan's (1980) study to help us to determine further how the nature of the relationships between reading and writing changes at various developmental levels and if the relationships between reading and writing at different levels depend on what type of reading or writing is being used or assessed.

Fourth, we would benefit even more from case study investigations of the quality and quantity of the reading that good and poor writers do to obtain a clearer picture of the nature of the influence of reading experience. We need to know which is more beneficial to developing writers: any kind of reading experiences or only certain types of reading experiences.

Fifth, better measures to define and assess lexical growth in writing are needed. Many studies examined only syntactic aspects of writing ability in relation to reading achievement. None of the studies developed new measures of lexical

maturity or complexity in students' writing in order to examine the relationship between writing vocabulary and reading ability; those studies that examined vocabulary used only traditional measures, such as vocabulary diversity or the number of rare words used.

Sixth, we need to know more about the reading behaviors of good and poor writers when they read the prose of others as well as their own writing during the composing process. Do students who read and revise their own writing in light of initial plans also read others' writing in a similar fashion, and are they, accordingly, better readers? Meyer (1982) suggests that better readers tend to formulate or use the author's topical plans in order to organize and comprehend instructional material more than do poorer readers.

We also need studies examining writing behaviors during the reading process, especially the reading of expository texts. Such knowledge could be helpful in suggesting learning strategies for poor readers or poor writers.

Seventh, studies of the writing of English-as-a-Second-Language (ESL) students of various language groups in relation to their level of proficiency in English in both speech and reading seem needed not only from the practical point of view of error analysis, but from a theoretical perspective as well. All the studies reviewed in this paper examined relationships between reading and writing in native English-speaking students. There is apparently no research at the upper elementary and secondary levels examining the writing of ESL students and the relationships between traits in their writing and their reading scores in English. Research in this area at different developmental levels might provide significant data with which to assess the relative influence of reading and speech on writing.

Finally, future research on the relationships between reading and writing needs to be related more explicitly to a clearly formulated theory about the relationship of written to oral language and the relationship between reading and writing. For example, is the research based on a theory that claims that growth in reading or writing is always dependent on the prior development of oral language, or is the research based on a theory that claims that written language may influence the development of meaning in oral language and that reading and writing may influence each other directly? (See Stotsky, forthcoming *b*, for a description of these two theories.) Many of the experimental studies reviewed here seem to be compatible implicitly, if not explicitly, with the latter theory and, insofar as significant results were obtained, provide support for this theory. Use of a well articulated theoretical model, with supporting evidence from extensive research, could help to guide curriculum development in both reading and writing more effectively than current research appears to have done.

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Composing and Comprehending: Two Sides of the Same Basic Process

> The National Assessment of Educational Progress reveals that eighty-five percent of all thirteen-year-olds can correctly complete a multiple choice check on comprehension, but only fifteen percent can write an acceptable sentence summarizing the paragraph read (NAEP 1981).
>
> Today's teachers talk much about the importance of teaching reading comprehension and Durkin's work has revealed how little we actually teach children how to comprehend (1979, 1981). Yet even that instruction which occupies attention seems to focus on the word or word part (Mason and Osborn 1982). Teaching children how to find meaning in a paragraph or a longer piece of discourse appears to be a sometime thing (Pearson and Johnson 1979).
>
> Today's teachers talk much about the process of composing (Graves 1978). Yet only four percent of the social studies and science teachers in grades seven through twelve and not more than ten percent of the English teachers in these grades provide young people with opportunities to process ideas in their own language, i.e., to compose their own thoughts in writing (Applebee 1981). And not more than four to seven percent of all seventeen-year-olds, nearing the end of their schooling, can recall any teacher ever discussing the composing process with them, or for that matter, ever having had a personal conference about their compositions (NAEP 1981).

Such conditions, too frequent in most of today's schools, stem inevitably from a failure to recognize that composing and comprehending are process-oriented thinking skills which are basically interrelated. Our failure to teach composing and comprehending as process impedes our efforts not only to teach children to read and write, but our efforts to teach them how to think.

This can be demonstrated in at least six different ways.

1. Basic to all reading and writing is skill in processing language.

As children learn their language, they learn to think. Thinking and language may

not be identical. Some thinking does occur through numbers, and some through visual symbols. But for most children language is the major vehicle through which thinking occurs (Britton 1970), and it is through language that children learn to label ideas, to classify, to relate the new to the known, to construct ideas or compose, to reconstruct or comprehend.

"It takes two to read a book," says Purves (1972), or to reflect on a film or to understand a message or to learn from life. An activity becomes experience only when one engages in thinking about it (Dewey 1963). And for children, particularly, thinking about any experience, real or vicarious, must involve language.

Composing is critical to thought processes because it is a process which actively engages the learner in constructing meaning, in developing ideas, in relating ideas, in expressing ideas. Comprehending is critical because it requires the learner to reconstruct the structure and meaning of ideas expressed by another writer. To possess an idea that one is reading about requires competence in regenerating the idea, competence in learning how to write the ideas of another. Thus both comprehending and composing seem basic reflections of the same cognitive process. This is what the teaching of the higher thought processes is all about.

2. Classroom strategies for regenerating ideas are essential to teaching comprehending.

Summarizing, retelling, rephrasing, reprocessing, elaborating, acting out, translating from one medium of communication to another—these are vital approaches which require the reader to review, reprocess, and recreate the structure of prose. The books we remember, the experiences we best recall, are those we have talked or written about. Somehow in reprocessing ideas and events again and again, we add them to our short term and long term memories. Stotsky recently summarized some methods for using writing to reinforce reading (1982), but Wittrock and his colleagues have long explored the basic processes underlying such approaches under the rubric "generative reading comprehension" (1975).

This aspect of the relationship between comprehending and composing explains why Graves and Hansen report early success in their exploratory project encouraging first grade children to write about their reading (and to verbalize about the process) (1982). The relationship and the absence of adequate interaction about ideas also explains why preschool children learn little from the 5,000 or more hours they spend watching television (Schramm 1977). Activity without language does not become experience. The work of Ann Brown and others with their studies of metacognition (1977, 1978, 1982), Duffy and Roehler's explorations in reading (1981), and Perry Lanier's work in mathematics at the Institute for Research on Teaching, Michigan State University (1982), are demonstrating how thinking about the process of comprehending, that is, consciously considering the reconstructions that one composes, can enhance the basic process itself.

Instructional experience in analyzing composing and comprehending has long been treated as basic to successful reading and writing in the schools in England. From the beginning of most junior schools through the early forms of the secondary (roughly the equivalent of American grades three to nine) British children study "Prose Paragraphs" one or two periods a week. Identified neither as reading nor

writing, the instruction focuses on analyses in depth of selected prose paragraphs—the relationship between words, of word to sentence, of sentence to sentence, of part to whole, of basic rhetorical structure. Almost always the hour of instruction ends with writing a paraphrase. Both expository and imaginative prose forms are selected for analysis. And no matter how great creativity and freedom in writing and role playing elsewhere in the curriculum, disciplined and structured analyses of prose paragraphs is maintained in many schools (Squire and Applebee 1969). Two hours a week; seventy-two hours a year; five hundred and seventy-six hours of instructional experience in comprehending and composing over six years. What a marvelous basis for teaching children to write and to read.

The significance of experiences in processing ideas in language also explains why the interactive uses of computers, especially word processors, hold such promise for enhancing classroom instruction in reading and writing.

3. Because language learning and language processing involve cognitive processes basic to every discipline, application to the discipline is critical if children are to learn to think in the discipline.

The skills required to read science must be acquired through reading science. The skills required in writing science can be learned only by writing science. Basic reading and writing instruction can provide children with a rudimentary vocabulary and certain basic skills of literacy, but application to higher levels of processing requires specialized uses. We have long since learned that unless children are taught to apply basic comprehension skills to a variety of subject matters—and experience guided practice in applying the skills—they will not easily transfer their skills. Instances of inability, say, to apply academic reading skills to life situations have been widely reported. See, for example, the Adult Functional Literacy Project (Murphy 1973).

One reason, of course, is that the skills have unique and particular relevance to every discipline. Reading for sequence in a short story, for example, is very different from reading for historical sequence, or reading for sequence in a process article. Direct attention to skill applications in reading (and writing, too) appears to be mandatory and is one reason why content area selections must be introduced in basic reading programs. Restricted only to reading poems, plays, and stories, children can too easily find their competence restricted to literary activity as well.

Equally important is experience in writing in every content area. A child who writes science or social studies or industrial arts, acquires the basic vocabulary of the subject. That child learns to use the technical terms in context; learns how language is used in each discipline; in short, learns to think as a scientist or think as an historian. Over several years, practice in writing in subject areas will contribute strongly to the performance in reading and thinking in the discipline.

Until recently few schools reported much writing across the curriculum, although partisans have long stressed its value (Martin 1976).

Probably more writing occurs in science than in any other discipline. One unpublished study of schools in New England suggests that forty-five percent of all science classes from grade five on write, compared with twenty-one percent of social science classes and less than four percent of mathematics classes. Students write

in science, apparently, because writing is one of the ways of science, not because teachers seek to teach writing. A daily log in a fifth grade records observations as a child watches a polywog growing to a frog. Such activities are almost routine science. So is writing up a science experiment—a laboratory report—in eighth grade physical science. But as the children write science, they process the ideas of science. They use the language of science. They learn to think in science. They prepare themselves to understand their reading of science. By the time they are enrolled in tenth grade biology they are ready to comprehend with reasonable understanding textbooks far more difficult in science than in any other subject field. Indeed the most widely used biology textbook in this country has a tested readability level of several years above grade level, yet few teachers report basic problems in using the textbook with young people.

Contrast this condition with what presently obtains in social studies. The same student who can respond to a biology test written three years above grade level may a year later require an American history textbook written well below. As Applebee has shown, much of the writing in social studies is note taking—a not unimportant but severely limited kind of processing (1981). With insufficient experience in composing social studies, children do not learn the technical vocabulary of social studies, do not learn how language is used in the discipline, do not learn how to construct and compose and to reconstruct or comprehend.

Even more critical is the situation in mathematics where teachers regularly report their major concern is not computation but problem solving. And to most teachers, solving problems means reading and understanding the word problems. Why can't students read the word problems? Because they have never written any. They have not had the opportunity to learn how language is used in mathematics.

4. Children and young people require instructional experience in all important modes of rhetoric if they are to comprehend and compose using these varied forms and functions.

We have long learned from Durkin's work that children who know how to read before they enter schools have had extensive experiences in listening to oral reading (1966). Stein's recent work with story grammars suggests that such children have internalized the basic story structure and have prepared themselves to understand the basic patterns (1981, 1982). Work with story grammars and story plans has been reported as an aid to teaching comprehension (Beck 1979, 1982; Pearson 1980) and clearly sensitivity to such structures helps in understanding basic narratives.

But recently Calfee (1983), Meyer (1975), and others suggest that grammars of exposition exist and that young people need to internalize these basic patterns as a way of preparing to comprehend prose written in each discipline in much the same way that Stein finds story patterns to be helpful.

Writing, like reading, requires attention to the various modes and functions of language. One exploratory project in England attempted to define the varieties of linguistic experience into 110 different kinds of experiences and to provide reading and writing experience in each area (see Doughty et al. 1971).

Certainly writing samples collected during two recent statewide assessments of composition indicate our requirement to provide instruction and practice with

any form of reading and writing which children are to master. In 1978 both New York and Texas tested the proficiency of thirteen-year-olds and seventeen-year-olds in writing business letters, reports, and persuasive pieces of prose. Results were uniform throughout both states. Most young people could write acceptable business letters because they had had instruction and directed practice in writing business letters. Some young people wrote acceptable reports; some did not. The results approached a normal distribution as, subsequent to the assessment, educational leaders found past instructional experience varied from school to school. But in the third area assessed, persuasive writing, many of the most talented students failed—including those whose scores on the standardized reading tests greatly exceeded grade level norms. Neither these students nor their less able colleagues could write persuasively because they had had next to no instruction or instructional practice in writing or in reading persuasive writing.

Texas and New York teachers have long since remedied this deficiency in their curriculum in reading and writing, but one cannot help wondering whether other important modes of language are also being overlooked. Agreement on the functions and modes of language which require attention in teaching reading and writing is long overdue.

5. Instruction in comprehending and composing must concentrate on coping with the total process of constructing and reconstructing ideas.

One does not learn to read only by completing an endless series of discrete practices on isolated reading skills. Or learn to write by facing only endless sequences of "itty, bitty" sentences and paragraphs.

Nor does one learn to write by mastering only isolated principles of English grammar or separate elements of English. Or learn to read only by mastering isolated sounds and letters.

Important as these subskills may be, they at best support the total task of comprehending a longer selection or communicating a fully developed idea. Our task is to teach students how to relate the various subskills in achieving a totality of meaning and to interrelate the variety of skills required to comprehend, so as to see the relationship of part to whole and of part to part.

To understand a complete short story, after all, or a chapter in a geography book, the reader must not only demonstrate mastery of separate skills—main idea, detail, sequence, the like—but more importantly learn how to relate the skills in achieving an all embracing meaning. This is why story maps have proven so useful in teaching reading comprehension (see Pearson 1980 and Beck 1979). This is why young readers are best encouraged to read a complete selection for total effect before initiating the study of parts in relation to the whole.

Similarly in learning to write, young people must understand the whole in order to cope with the parts. Focusing instruction separately on the word, the sentence, the paragraph, and then the longer piece of discourse may seem logically right, but it is psychologically wrong. From the very beginning children seek to communicate within a total context.

Directing attention to specific skills is important since we know those skills that are not taught are not acquired. But teaching the specific skills in a holistic

context is critical. This is why the total processes of reading and writing are so important and why the processes are so similar.

Before Writing:	Securing ideas Organizing ideas Determining point of view Considering audience
Before Reading:	Preparing to comprehend Relating to prior experience Establishing purpose Looking for the author's stance
During Reading or Writing:	Composing or comprehending Actively engaged emotionally and intellectually
After Writing:	Evaluating Editing and revising Applying outside standards of correctness
After Reading:	Evaluating Studying parts in relation to whole Analyzing how effects are achieved Applying independent judgments (preferences, ethics, aesthetics)

As Squire demonstrated in his study of the responses of adolescents to short stories (1964), the complete processes of comprehending, like the complete process of composing, proceeds through predictable stages. Recent reviews of the comprehension process tend to corroborate this view (Crafton 1982; Langer 1982).

6. A critical factor in shaping the quality of both composing and comprehending is the prior knowledge the pupil brings to reading and writing.

Students of response to literature have long recognized that the knowledge and attitudes that readers bring to a text help to determine the meaning that each derives from the text (Richards 1929; Rosenblatt 1976). More recently cognitive psychologists have demonstrated that, when linguistic aptitude is held constant, the reader's schemata—the sum total of his or her world knowledge and skill in retrieving these attitudes and ideas—may be the most important variable in determining the quality of comprehension (Anderson 1977; Pearson 1978; Langer 1982). As studies of the influence of a reader's prior knowledge or comprehension continue, findings are also accumulating which suggest the significance of prior knowledge (real or vicarious) on subject matter learning (see, for example, the work of C. Anderson (1982) on science misconceptions).

Less widely recognized, however, is the way in which prior knowledge affects the quality of composing. Yet clearly pupils write best about subjects on which they are well informed. Indeed a major division of classical rhetoric has always been invention, the study of sources of ideas and the ways of retrieving ideas.

Three aspects of prior knowledge seem important in planning curriculum in composition and comprehension: a) knowledge about rhetorical structures—the story grammars or patterns of expository prose discussed earlier in this paper; b) the accumulation of knowledge and experience prerequisite to understanding or writing about an important concept or idea; c) the strategies children must acquire to unlock the world knowledge that they have accumulated—to learn how to ask themselves those questions before writing or before reading that seem most likely to enhance composing and comprehending.

Recognition of the importance of applying individual knowledge to one's reading and writing inevitably requires curriculum planning that addresses the requisite buildup in ideas. What prior knowledge is required, say, to understand the "Gettysburg Address?" About Lincoln and the War Between the States? About the rhetorical structures involved? About the racial and economic conflicts? And where and how are schools building the needed concepts? Not surely in the four-minute writing and reading assignments found typically in the average secondary school classroom (Applebee 1981).

Recognizing the significance of prior knowledge to the processing of ideas through language seems to require teachers to direct far more careful attention to pre-reading and pre-writing experiences in reading and writing (Graves 1982).

Current research in composing and comprehending is increasingly clarifying the interaction between these two dimensions of the thinking process. In both areas we are moving from an overt concern with discrete and often isolated subskills to a recognition of the importance of the interrelationship of skills within the total process. In a very real sense this shift in professional thinking reflects a movement from concern with a psychology of learning based largely on principles of behavioral psychology to learning principles emanating more from cognitive psychology. However our concentration on specific skills and observable behaviors has helped us to strengthen the teaching of beginning reading and to establish a minimum literacy level for many of our students. Our new insights indicate that progress in strengthening all higher thought processes will depend on devoting more direct attention to improving the underlying processes. And in focusing on these processes, particulary the processes of composing and comprehending, those who have long sought sensible ways of integrating the teaching of the language arts may find the long sought answers to the questions that they have been seeking.

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Toward a Composing Model of Reading

We believe that at the heart of understanding reading and writing connections one must begin to view reading and writing as essentially similar processes of meaning construction. Both are acts of composing. From a reader's perspective, meaning is created as a reader uses his background of experience together with the author's cues to come to grips both with what the writer is getting him to do or think *and* what the reader decides and creates for himself. As a writer writes, she uses her own background of experience to generate ideas and, in order to produce a text which is considerate to her idealized reader, filters these drafts through her judgements about what her reader's background of experience will be, what she wants to say, and what she wants to get the reader to think or do. In a sense both reader and writer must *adapt* to their perceptions about their partner in negotiating what a text means.

Witness if you will the phenomenon which was apparent as both writers and readers were asked to think aloud during the generation of, and later response to, directions for putting together a water pump (Tierney et al., in press; Tierney 1983). As Tierney (1983) reported:

> At points in the text, the mismatch between readers' think-alouds and writers' think-alouds was apparent: Writers suggested concerns which readers did not focus upon (e.g., I'm going to have to watch my pronouns here. . . . It's rather stubborn—so I

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> better tell how to push it hard . . . he should see that it looks very much like a syringe), and readers expressed concerns which writers did not appear to consider (I'm wondering why I should do this . . . what function does it serve). As writers thought aloud, generated text, and moved to the next set of sub-assembly directions, they would often comment about the *writers' craft* as readers might (e.g., no confusion there. . . . That's a fairly clear descriptor . . . and we've already defined what that is). There was also a sense in which writers marked their compositions with an "okay" as if the "okay" marked a movement from a turn as reader to a turn as writer. Analyses of the readers' *think alouds* suggested that the readers often felt frustrated by the writers' failure to explain why they were doing what they were doing. Also the readers were often critical of *the writer's craft*, including writers' choice of words, clarity, and accuracy. There was a sense in which the readers' *think alouds* assumed a reflexive character as if the readers were rewriting the texts. If one perceived the readers as craftpersons, unwilling to blame their tools for an ineffective product, then one might view the readers as unwilling to let the text provided stand in the way of their successful achievement of their goals or pursuit of understanding. (p. 150)

These data and other descriptions of the reading act (e.g., Bruce 1981; Collins, Brown and Larkin 1970; Rosenblatt 1976, 1980; Tompkins 1980) are consistent with the view that texts are written and read in a tug of war between authors and readers. These think-alouds highlight the kinds of internal struggles that we all face (whether consciously or unconsciously) as we compose the meaning of a text in front of us.

Few would disagree that writers compose meaning. In this paper we argue that readers also compose meaning (that there is no meaning on the page until a reader decides there is). We will develop this position by describing some aspects of the composing process held in parallel by reading and writing. In particular, we will address the essential characteristics of effective composing: planning, drafting, aligning, revising and monitoring.

Planning

As a writer initially plans her writing, so a reader plans his reading. Planning involves two complementary processes: goal-setting and knowledge mobilization. Taken together, they reflect some commonly accepted behaviors, such as setting purposes, evaluating one's current state of knowledge about a topic, focussing or narrowing topics and goals, and self-questioning.

Flower and Hayes (1981) have suggested that a writer's goals may be procedural (e.g., how do I approach this topic), substantive (e.g., I want to say something about how rockets work), or intentional (e.g., I want to convince people of the problem). So may a reader's goals be procedural (e.g., I want to get a sense of this topic overall), substantive (e.g., I need to find out about the relationship between England and France), or intentional (e.g., I wonder what this author is trying to say) or some combination of all three. These goals can be embedded in one another or addressed concurrently; they may be conflicting or complementary. As a reader reads (just as when a writer writes) goals may emerge, be discovered, or change. For example, a reader or writer may broaden, fine tune, redefine, delete, or replace goals. A fourth grade writer whom we interviewed about a project he had completed on American Indians illustrates these notions well: As he stated his changing

goals, ". . . I began with the topic of Indians but that was too broad, I decided to narrow my focus on Hopis, but that was not what I was really interested in. Finally, I decided that what I really wanted to learn about was medicine men . . . I really found some interesting things to write about." In coming to grips with his goals our writer suggested both procedural and substantive goals. Note also that he refined his goals prior to drafting. In preparation for reading or writing a draft, goals usually change; mostly they become focussed at a level of specificity sufficient to allow the reading or writing to continue. Consider how a novel might be read. We begin reading a novel to discover the plot, yet find ourselves asking specific questions about events and attending to the author's craft—how she uses the language to create certain effects.

The goals that readers or writers set have a symbiotic relationship with the knowledge they mobilize, and together they influence what is produced or understood in a text (Anderson, Reynolds, Schallert and Goetz 1977; Anderson, Pichert and Shirey 1979; Hays and Tierney 1981; Tierney and Mosenthal 1981). A writer plans what she wants to say with the knowledge resources at her disposal. Our fourth grade writer changed his goals as a function of the specificity of the knowledge domain to which he successively switched. Likewise readers, depending on their level of topic knowledge and what they want to learn from their reading, vary the goals they initiate and pursue. As an example of this symbiosis in a reader, consider the following statement from a reader of *Psychology Today*.

> I picked up an issue of *Psychology Today*. One particular article dealing with women in movies caught my attention. I guess it was the photos of Streep, Fonda, Lange, that interested me. As I had seen most of their recent movies I felt as if I knew something about the topic. As I started reading, the author had me recalling my reactions to these movies (Streep in "Sophie's Choice," Lange in "Tootsie," Fonda in "Julia"). At first I intended to glance at the article. But as I read on, recalling various scenes, I became more and more interested in the author's perspective. Now that my reactions were nicely mobilized, this author (definitely a feminist) was able to convince me of her case for stereotyping. I had not realized the extent to which women are either portrayed as the victim, cast with men, or not developed at all as a character in their own right. This author carried me back through these movies and revealed things I had not realized. It was as if I had my own purposes in mind but I saw things through her eyes.

What is interesting in this example is how the reader's knowledge about films and feminism was mobilized at the same time as his purposes became gradually welded to those of the author's. The reader went *from* almost free association, *to* reflection, *to* directed study of what he knew. It is this directed study of what one knows that is so important in knowledge mobilization. A writer does not just throw out ideas randomly; she carefully plans the placement of ideas in text so that each idea acquires just the right degree of emphasis in text. A successful reader uses his knowledge just as carefully; at just the right moment he accesses just the right knowledge structures necessary to interpret the text at hand in a way consistent with his goals. Note also how the goals a reader sets can determine the knowledge he calls up; at the same time, that knowledge, especially as it is modified in conjunction with the reader's engagement of the text, causes him to alter his goals. Initially, a reader might "brainstorm" his store of knowledge and maybe organize some of it (e.g., clustering ideas using general questions such as who, what, when, where, or why

or developing outlines). Some readers might make notes; others might merely think about what they know, how this information clusters, and what they want to pursue. Or, just as a writer sometimes uses a first draft to explore what she knows and what she wants to say, so a reader might scan the text as a way of fine tuning the range of knowledge and goals to engage, creating a kind of a "draft" reading of the text. It is to this topic of drafting that we now turn your attention.

Drafting

We define drafting as the refinement of meaning which occurs as readers and writers deal directly with the print on the page. All of us who have had to write something (be it an article, a novel, a memo, a letter, or a theme), know just how difficult getting started can be. Many of us feel that if we could only get a draft on paper, we could rework and revise our way to completion. We want to argue that getting started is just as important a step in reading. What every reader needs, like every writer, is a first draft. And the first step in producing that draft is finding the right "lead." Murray (1982) describes the importance of finding the lead:

> The lead is the beginning of the beginning, those few lines the reader may glance at in deciding to read or pass on. These few words—fifty, forty, thirty, twenty, ten—establish the tone, the point of view, the order, the dimensions of the article. In a sense, the entire article is coiled in the first few words waiting to be released.
>
> An article, perhaps even a book, can only say one thing and when the lead is found, the writer knows what is included in the article and what is left out, what must be left out. As one word is chosen for the lead another rejected, as a comma is put in and another taken away, the lead begins to feel right and the pressure builds up until it is almost impossible not to write. (p. 99)

From a reader's perspective, the key points to note from Murray's description are these: 1) "the entire article is coiled in these first few words waiting to be released," and 2) "the lead begins to feel right. . . ." The reader, as he reads, has that same feeling as he begins to draft his understanding of a text. The whole point of hypothesis testing models of reading like those of Goodman (1967) and Smith (1971) is that the current hypothesis one holds about what a text means creates strong expectations about what succeeding text ought to address. So strong are these hypotheses, these "coilings," these drafts of meaning a reader creates that incoming text failing to cohere with them may be ignored or rejected.

Follow us as we describe a hypothetical reader and writer beginning their initial drafts.

A reader opens his or her textbook, magazine or novel; a writer reaches for his pen. The reader scans the pages for a place to begin; the writer holds the pen poised. The reader looks over the first few lines of the article or story in search of a sense of what the general scenario is. (This occurs whether the reader is reading a murder mystery, a newspaper account of unemployment, or a magazine article on underwater life.) Our writer searches for the lead statement or introduction to her text. For the reader, knowing the scenario may involve knowing that the story is about women engaged in career advancement from a feminist perspective, knowing

the murder mystery involves the death of a wealthy husband vacationing abroad. For the writer, establishing the scenario involves prescribing those few ideas which introduce or define the topic. Once established, the reader proceeds through the text, refining and building upon his sense of what is going on; the writer does likewise. Once the writer has found the "right" lead, she proceeds to develop the plot, expositions, or descriptions. As the need to change scenarios occurs, so the process is repeated. From a schema-theoretic perspective, coming to grips with a lead statement or, if you are a reader, gleaning an initial scenario, can be viewed as schema selection (which is somewhat equivalent to choosing a script for a play); filling in the slots or refining the scenario is equivalent to schema instantiation.

As our descriptions of a hypothetical reader suggest, what drives reading and writing is this desire to make sense of what is happening—to make things cohere. A writer, achieves that fit by deciding what information to include and what to withhold. The reader accomplishes that fit by filling in gaps (it must be early in the morning) or making uncued connections (he must have become angry because they lost the game). All readers, like all writers, ought to strive for this fit between the whole and the parts and among the parts. Unfortunately, some readers and writers are satisfied with a piecemeal experience (dealing with each part separately), or, alternatively, a sense of the whole without a sense of how the parts relate to it. Other readers and writers become "bogged down" in their desire to achieve a perfect text or "fit" on the first draft. For language educators our task is to help readers and writers to achieve the best fit among the whole and the parts. It is with this concern in mind that we now consider the role of alignment and then revision.

Aligning

In conjunction with the planning and drafting initiated, we believe that the alignment a reader or writer adopts can have an overriding influence on a composer's ability to achieve coherence. We see alignment as having two facets: stances a reader or writer assumes in collaboration with their author or audience, and roles within which the reader or writer immerse themselves as they proceed with the topic. In other words, as readers and writers approach a text they vary the nature of their stance or collaboration with their author (if they are a reader) or audience (if they are a writer) and, in conjunction with this collaboration, immerse themselves in a variety of roles. A writer's stance toward her readers might be intimate, challenging or quite neutral. And, within the contexts of these collaborations she might share what she wants to say through characters or as an observer of events. Likewise, a reader can adopt a stance toward the writer which is sympathetic, critical or passive. And, within the context of these collaborations, he can immerse himself in the text as an observer or eye witness, participant or character.

As we have suggested, alignment results in certain benefits. Indeed, direct and indirect support for the facilitative benefits of adopting alignments comes from research on a variety of fronts. For example, schema theoretic studies involving an analysis of the influence of a reader's perspective have shown that if readers are given different alignments prior to or after reading a selection, they will vary in what and how much they will recall (Pichert 1979; Spiro 1977). For example, readers

told to read a description of a house from the perspective of a homebuyer or burglar tend to recall more information and are more apt to include in their recollections information consistent with their perspective. Furthermore, when asked to consider an alternative perspective these same readers were able to generate information which they previously had not retrieved and which was important to the new perspective. Researchers interested in the effects of imaging have examined the effects of visualizing—a form of alignment which we would argue is equivalent to eye witnessing. Across a number of studies it has been shown that readers who are encouraged to visualize usually perform better on comprehension tasks (e.g., Sodoski, in press). The work on children's development of the ability to recognize point of view (Hay and Brewer 1982; Applebee 1978) suggests that facility with alignment develops with comprehension maturity. From our own interviews with young readers and writers we have found that the identification with characters and immersion in a story reported by our interviewees accounts for much of the vibrancy, sense of control and fulfillment experienced during reading and writing. Likewise, some of the research analyzing proficient writing suggests that proficient writers are those writers who, when they read over what they have written, comment on the extent to which their story and characters are engaging (Birnbaum 1982). A number of studies in both psychotherapy and creativity provide support for the importance of alignment. For purposes of generating solutions to problems, psychotherapists have found it useful to encourage individuals to exchange roles (e.g., mother with daughter). In an attempt to generate discoveries, researchers have had experts identify with the experiences of inanimate objects (e.g., paint on metal) as a means of considering previously inaccessible solutions (e.g., a paint which does not peel).

Based upon these findings and our own observations, we hypothesize that adopting an alignment is akin to achieving a foothold from which meaning can be more readily negotiated. Just as a filmmaker can adopt and vary the angle from which a scene is depicted in order to maximize the richness of a filmgoer's experience, so too can a reader and writer adopt and vary the angle from which language meanings are negotiated. This suggests, for language educators, support for those questions or activities which help readers or writers take a stance on a topic and immerse themselves in the ideas or story. This might entail having students read or write with a definite point of view or attitude. It might suggest having students project themselves into a scene as a character, eye witness or object (imagine you are Churchill, a reporter, the sea). This might occur at the hands of questioning, dramatization, or simply role playing. In line with our hypothesis, we believe that in these contexts students almost spontaneously acquire a sense of the whole as well as the parts.

To illustrate how the notion of alignment might manifest itself for different readers, consider the following statement offered by a professor describing the stances he takes while reading an academic paper:

> When I read something for the first time, I read it argumentatively. I also find later that I made marginal notations that were quite nastly like, "You're crazy!" or "Why do you want to say that?" Sometimes they are not really fair and that's why I really think to read philosophy you have to read it twice. . . . The second time you read it over you

> should read it as sympathetically as possible. This time you read it trying to defend the person against the very criticisms that you made the first time through. You read every sentence and if there is an issue that bothers you, you say to yourself, "This guy who wrote this is really very smart. It sounds like what he is saying is wrong; I must be misunderstanding him. What could he really want to be saying?" (Freeman 1981, p. 11)

Also, consider Eleanor Gibson's description of how she approaches the work of Jane Austen:

> Her novels are not for airport reading. They are for reading over and over, savoring every phrase, memorizing the best of them, and getting an even deeper understanding of Jane's "sense of human comedy. . . ." As I read the book for perhaps the twenty-fifth time, I consider what point she is trying to make in the similarities and differences between the characters. . . . I want to discover for myself what this sensitive and perceptive individual is trying to tell me. Sometimes I only want to sink back and enjoy it and laugh myself. (Gibson and Levin 1975 pp. 458-460)

Our professor adjusted his stance from critic to sympathetic coauthor across different readings. Our reader of Austen was, at times, a highly active and sympathetic collaborator and, at other times, more neutral and passive.

Obviously, the text itself prompts certain alignments. For example, consider how an author's choice of words, arguments, or selection of genre may invite a reader to assume different stances and, in the context of these collaborations, different roles.[1] The opening paragraph of Wolfe's *Electric Kool-Aid Acid Test* (1977) illustrates how the use of first person along with the descriptive power of words (e.g., cramped . . . metal bottom . . . rising . . . rolling . . . bouncing) compels the reader to engage in a sympathetic collaboration with an author and be immersed as an active participant in a truck ride across the hills of San Francisco.

> That's good thinking there, Cool Breeze. Cool Breeze is a kid with 3 or 4 days' beard sitting next to me on the cramped metal bottom of the open back part of the pickup truck. Bouncing along. Dipping and rising and rolling on these rotten springs like a boat. Out the back of the truck the city of San Francisco is bouncing down the hill, all those endless staggers of bay windows, slums with a view, bouncing and streaming down the hill. One after another, electric signs with neon martini glasses lit up on them, the San Francisco symbol of "bar"—thousands of neon-magenta martini glasses bouncing and streaming down the hill, and beneath them thousands of people wheeling around to look at this freaking crazed truck we're in, their white faces erupting from their lapels like marshmallows—streaming and bouncing down the hill—and God knows they've got plenty to look at. (p. 1)

Also, consider the differences in collaboration and role taking the following text segments invite. While both texts deal with the same information, in one text, the information is presented through a conversation between two children, and in the other text, the information is presented in a more "straight forward" expository style.

> FLY
> Lisa and Mike were bored. It was Saturday and they did not know what to do until Lisa had an idea. "I know a game we can play that they play in some countries . . .

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1. It is not within the scope of this paper to characterize the various mechanisms by which writers engage readers. We would encourage readers to examine different texts for themselves and some of the analytic schemes generated by Bruce (1981) and Gibson (1975), among others.

> FLY
> All over the world children like to play different games. In some countries, children enjoy playing a game called "Fly."

We have found that readers of the first text usually assume a sympathetic collaboration with the writer and identify with the characters. They view the game through the eyes of the children and remain rather neutral with respect to the author. Our readers of the second text tend to have difficulty understanding the game at the same time as they are critical of the author. They adopt a role more akin to an observer who, lacking a specific angle, catches glimpses of the game without acquiring an overall understanding. Some of us have experienced a similar phenomenon as viewers of an overseas telecast of an unfamiliar sport (e.g., the game of cricket on British television). The camera angles provided by the British sportscasters are disorienting for the native viewer.

Clearly a number of factors may influence the nature of a reader's alignment and the extent to which his resulting interpretation is viable. A reader, as our last example illustrated, might adopt an alignment which interferes with how well he will be able to negotiate an understanding. Sometimes a reader might adopt an alignment which overindulges certain biases, predispositions, and personal experiences. Doris Lessing (1973) described this phenomenon in a discussion of readers' responses to her *The Golden Notebook:*

> Ten years after I wrote [it], I can get, in one week, three letters about it. . . . One letter is entirely about the sex war, about man's inhumanity to woman, and woman's inhumanity to man, and the writer has produced pages and pages all about nothing else, for she—but not always a she—can't see anything else in the book.
>
> The second is about politics, probably from an old Red like myself, and he or she writes many pages about politics, and never mentions any other theme.
>
> These two letters used, when the book was—as it were—young, to be the most common.
>
> The third letter, once rare but now catching up on the others, is written by a man or a woman who can see nothing in it but the theme of mental illness.
>
> But it is the same book.
>
> And naturally these incidents bring up again questions of what people see when they read a book, and why one person sees one pattern and nothing at all of another pattern, and how odd it is to have, as author, such a clear picture of a book, that is seen so very differently by its readers. (p. xi)

Such occurrences should not be regarded as novel. It is this phenomenon of reader-author engagement and idiosyncratic response which has been at the center of a debate among literary theorists, some of whom (e.g., Jakobson and Levi-Strauss 1962) would suggest that a "true" reading experience has been instantiated only when readers assume an alignment which involves close collaboration with authors. Others would argue that readers can assume a variety of alignments, whether these alignments are constrained by the author (Iser 1974) or initiated freely by the reader (Fish 1970). They would rarely go so far as to suggest the destruction of the text, but instead, as Tompkins (1980) suggested, they might begin to view reading and writing as joining hands, changing places, "and finally becoming distinguishable only as two names for the same activity" (p. ii). We do not wish to debate the distinctions represented by these and other theorists, but to suggest

that there appears to be at least some consensus that effective reading involves a form of alignment which emerges in conjunction with a working relationship between readers and writers. In our opinion, this does not necessitate bridling readers and writers to one another. Indeed, we would hypothesize that new insights are more likely discovered and appreciations derived when readers and writers try out different alignments as they read and write their texts. This suggests spending time rethinking, reexamining, reviewing and rereading. For this type of experience does not occur on a single reading; rather it emerges only after several rereadings, reexaminations, and drafts. It is to this notion of reexamination and revision that we now turn.

Revising

While it is common to think of a writer as a reviser it is *not* common to think of a reader as someone who revises unless perhaps he has a job involving some editorial functions. We believe that this is unfortunate. We would like to suggest that revising should be considered as integral to reading as it is to writing. If readers are to develop some control over and a sense of discovery with the models of meaning they build, they must approach text with the same deliberation, time, and reflection that a writer employs as she revises a text. They must examine their developing interpretations and view the models they build as draft-like in quality—subject to revision. We would like to see students engage in behaviors such as rereading (especially with different alignments), annotating the text on the page with reactions, and questioning whether the model they have built is what they really want. With this in mind let us turn our attention to revising in writing.

We have emphasized that writing is not merely taking ideas from one's head and placing them onto the page. A writer must choose words which best represent these ideas; that is, she must choose words which have the desired impact. Sometimes this demands knowing what she wants to say and how to say it. At other times, it warrants examining what is written or read to discover and clarify one's ideas. Thus a writer will repeatedly reread, reexamine, delete, shape, and correct what she is writing. She will consider whether and how her ideas fit together, how well her words represent the ideas to be shared and how her text can be fine tuned. For some writers this development and redevelopment will appear to be happening effortlessly. For others, revision demands hard labor and sometimes several painful drafts. Some rework the drafts in their head before they rewrite; others slowly rework pages as they go. From analyses of the revision strategies of experienced writers, it appears that the driving force behind revision is a sense of emphasis and proportion. As Sommers (1980) suggested, one of the questions most experienced writers ask themselves is "what does my essay as a *whole* need for form, balance, rhythm, and communication?" (p. 386). In trying to answer this question, writers proceed through revision cycles with sometimes overlapping and sometimes novel concerns. Initial revision cycles might be directed predominately at topical development; later cycles might be directed at stylistic concerns.

For most readers, revision is an unheard of experience. Observations of secondary students reveal that most readers view reading competency as the ability to

read rapidly a single text once with maximum recall (Schallert and Tierney 1982). It seems that students rarely pause to reflect on their ideas or to judge the quality of their developing interpretations. Nor do they often reread a text either from the same or a different perspective. In fact, to suggest that a reader should approach text as a writer who crafts an understanding across several drafts—who pauses, rethinks, and revises—is almost contrary to some well established goals readers proclaim for themselves (e.g., that efficient reading is equivalent to maximum recall based upon a single fast reading).

Suppose we could convince students that they ought to revise their readings of a text; would they be able to do it? We should not assume that merely allowing time for pausing, reflecting, and reexamining will guarantee that students will revise their readings. Students need to be given support and feedback at so doing. Students need to be aware of strategies they can pursue to accomplish revisions, to get things restarted when they stall, and to compare one draft or reading with another. The pursuit of a second draft of a reading should have a purpose. Sometimes this purpose can emerge from discussing a text with the teacher and peers; sometimes it may come from within; sometimes it will not occur unless the student has a reason or functional context for revision as well as help from a thoughtful teacher.

Monitoring

Hand in hand with planning, aligning, drafting, and revising, readers and writers must be able to distance themselves from the texts they have created to evaluate what they have developed. We call this executive function monitoring. Monitoring usually occurs tacitly, but it can be under conscious control. The monitor in us keeps track of and control over our other functions. Our monitor decides whether we have planned, aligned, drafted, and/or revised properly. It decides when one activity should dominate over the others. Our monitor tells us when we have done a good job and when we have not. It tells us when to go back to the drawing board and when we can relax.

The complexity of the type of juggling which the monitor is capable of has been captured aptly in an analogy of a switchboard operator, used by Flower and Hayes (1980) to describe how writers juggle constraints:

> She has two important calls on hold. (Don't forget that idea.)
> Four lights just started flashing. (They demand immediate attention or they'll be lost.)
> A party of five wants to be hooked up together. (They need to be connected somehow.)
> A party of two thinks they've been incorrectly connected. (Where do they go?)
> And throughout this complicated process of remembering, retrieving, and connecting, the operator's voice must project calmness, confidence, and complete control. (p. 33)

The monitor has one final task—to engage in a dialogue with the inner reader.

When writers and readers compose text they negotiate its meaning with what Murray (1982) calls the other self—that inner reader (the author's first reader) who continually reacts to what the writer has written, is writing and will write or what the reader has read, is reading and will read. It is this other self which is the reader's or writer's counsel, and judge, and prompter. This other self oversees what

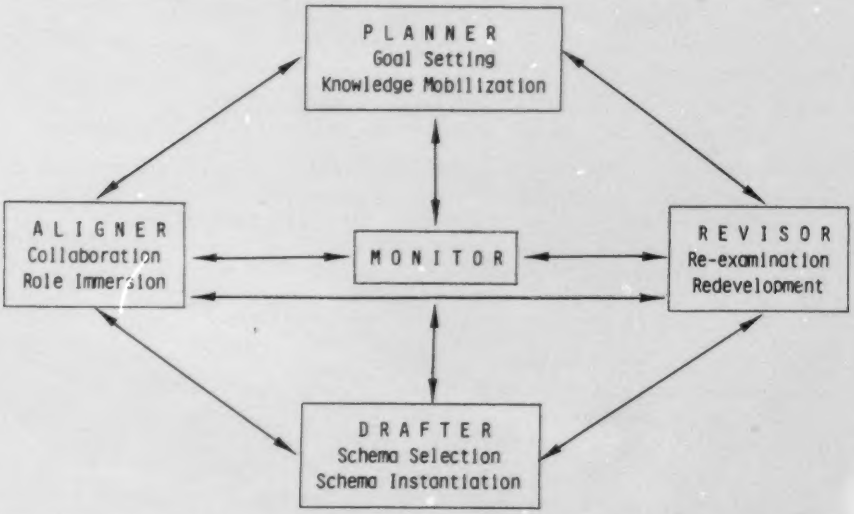
the reader and writer is trying to do, defines the nature of collaboration between reader and author, and decides how well the reader as writer or writer as reader is achieving his or her goals.

A Summary and Discussion

To reiterate, we view both reading and writing as acts of composing. We see these acts of composing as involving continuous, recurring, and recursive transactions among readers and writers, their respective inner selves, and their perceptions of each other's goals and desires. Consider the reader's role as we envision it. At the same time as the reader considers what he perceives to be the author's intentions (or what the reader perceives to be what the author is trying to get the reader to do or think), he negotiates goals with his inner self (or what he would like to achieve). With these goals being continuously negotiated (sometimes embedded within each other) the reader proceeds to take different alignments (critic, co-author, editor, character, reporter, eye witness, etc.) as he uses features from his own experiential arrays and what he perceives to be arrayed by the author in order to create a model of meaning for the text. These models of meaning must assume a coherent, holistic quality in which everything fits together. The development of these models of meaning occurs from the vantage point of different alignments which the reader adopts with respect to these arrays. It is from these vantage points that the various arrays are perceived, and their position adjusted such that the reader's goals and desire for a sense of completeness are achieved. Our diagrammatic representation of the major components of these processes is given in Figure 1.

Figure 1

Some Components of the Composing Model of Reading



Such an account of reading distinguishes itself from previous descriptions of reading and reading-writing relationships in several notable ways:

1. Most accounts of reading versus writing (as well as accounts of how readers develop a model of meaning) tend to emphasize reading as a receptive rather than productive activity. Some, in fact, regard reading as the mirror image of writing.
2. Most language accounts suggest that reading and writing are interrelated. They do not address the suggestion that reading and writing are multi-dimensional, multi-modal processes—both acts of composing.
3. The phenomenon of alignment as integral to composing has rarely been explored.
4. Most descriptions of how readers build models of meaning fail to consider how the processes of planning, drafting, aligning, and revising are manifested.
5. Previous interactional and transactional accounts of reading (Rosenblatt 1978; Rumelhart 1980) give little consideration to the transaction which occurs among the inner selves of the reader and writer.

What our account fails to do is thoroughly differentiate how these composing behaviors manifest themselves in the various contexts of reading and writing. Nor does it address the pattern of interactions among these behaviors across moments during any reading and writing experience. For example, we give the impression of sequential stages even though we believe in simultaneous processes. We hope to clarify and extend these notions in subsequent writings.

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Reading Like a Writer

The first time I explored learning to write in detail, I was tempted to conclude that it was, like the flight of bumblebees, a theoretical impossibility. I examined the trivializing oversimplifications that writing was basically a matter of handwriting and a few spelling and punctuation rules. I questioned the myth that one could learn to write by diligent attention to instruction and practice. And I was left with the shattering conundrum that writing requires an enormous fund of specialized knowledge which cannot be acquired from lectures, textbooks, drill, trial and error, or even from the exercise of writing itself. A teacher may set for children tasks that result in the production of a small but acceptable range of sentences, but much more is required to become a competent and adaptable author of letters, reports, memoranda, journals, term papers, and perhaps occasional poems or pieces of fiction suitable to the demands and opportunities of out-of-school situations. Where do people who write acquire all the knowledge that they need?

The conclusion I reached was as problematical as the riddle it was supposed to resolve, because I decided that it could only be through reading that writers learn all the intangibles that they know. And not only is there an unfortunate abundance of evidence that people who read do not necessarily become competent writers, but I had myself argued that fluent readers need not pay attention to matters like spelling and punctuation which must be the writer's concern. To learn to write, children must read in a special kind of way.

This article will follow the sequence of my reasoning. First I shall try to show that writing demands far more specialized knowledge than is usually realized, very little of which can be contained within formal instruction. Next I shall argue why this knowledge can only be acquired from a particular kind of reading. I shall then try to illustrate how this kind of reading occurs, and show that children are very

experienced at learning in this way. Finally I shall consider how teachers can facilitate such learning. I shall be concerned throughout with what might go wrong, so that even people who read extensively may fail to learn about writing.

The Complexity of Writing

Even the most mundane kinds of text involve a vast number of conventions of a complexity which could never be organized into formal instructional procedures. The scope and scale of such conventions are generally unsuspected by teachers and learners alike. Spelling, for example, demands the memorization of every word we are ever likely to write.[1] The "rules" of spelling can be numbered in the hundreds and still carry only a fifty percent probability of being correct for any particular word. There are so many alternatives and exceptions that we must confirm and memorize the correct spelling of every word we hope to write with confidence in the future, even if it does happen to be "regular." When does anyone check the spelling of all the words that are routinely spelled correctly, let alone commit them to memory?

Punctuation, capitalization and other "rules" of grammar are essentially circular and meaningless to anyone who cannot already do what is being "explained." Children are instructed to begin sentences with a capital letter and to end them with a period, but if they ask what a sentence is they will sooner or later be told that it is something which begins with a capital letter and ends with a period. The statement that a sentence is "a complete thought" is as inaccurate and useless as the assertion that a word is "a unit of meaning" or that a paragraph is organized around a single topic. How would anyone recognize a unit of meaning, a complete thought, or a topic in isolation? Linguists are unable to make any constructive use of such statements, which are definitions, not rules of application. They are meaningless to anyone without an implicit understanding of the conventions that determine what shall constitute a word, sentence, or paragraph, conventions which differ from one language to another. Unfortunately, those in possession of such implicit understanding tend to find the definitions transparently obvious and to regard them as the basis of learning rather than the consequence of having learned. Obviously anyone who can write must have knowledge of these conventions, but this knowledge cannot be made explicit and taught to others.

Even arbitrary "rules," descriptions, and definitions evade us when it comes to such subtle matters as style, the intricate registers that depend upon the topic of discussion and the audience addressed, and the "schemas" appropriate to the particular medium being employed. Not only must letters, telegrams, formal and informal notes, newspaper reports, magazine articles, short stories, and poems be composed differently, the format of the genre itself varies depending upon its specific purpose. Letters to close friends and to the bank manager have no more in common than news items in the *National Enquirer* and in the *Wall Street Journal*. These conventions remain to be fully investigated by linguists, who have only re-

1. The arguments in this section concerning the inadequacy of the "mechanics" which are the grist of writing instruction are condensed from Chapter 10 of Smith (1982).

cently begun to analyze many critical aspects of language which everyone observes and expects, in speech and in competent writing, without awareness of their existence. There are, for example, the complex rules of "cohesion" which link sentences to each other and to the non-language context (Halliday and Hasan 1976). How could any of this be reduced to prescriptions, formulas, or drills? Even if we could and do learn a few hundred spellings, some useful grammatical constructions and some precepts of punctuation through diligent study at school, these would be only a fraction of the expertise a competent journeyman writer requires.

What about learning by trial and error or "hypothesis-testing?" I thought the answer must be that we learn to write by writing until I reflected upon how little anyone writes in school, even the eager students, and how little feedback is provided. Errors may be corrected but how often are correct models provided, especially beyond the level of words? How often is such feedback consulted, and acted upon, especially by those who need correction most? No one writes enough to learn more than a small part of what writers have to know. Most experienced writers can produce text that is right the first time, or at least they can edit or rewrite into conventional form, without extensive feedback, what they more hurriedly produce. Besides, if we learn to write by testing hypotheses in writing, where do the hypotheses come from? Practice and feedback may help to polish writing skills, but cannot account for their acquisition in the first place.

Learners need to find and assimilate a multitude of facts and examples, ranging from individual spellings to the appropriate organization of complex texts. Where can all these facts and examples be found, when they are not available in the lectures, textbooks, and exercises to which children are exposed in classrooms? The only possible answer seemed as obvious to me as I hope it now is to the reader—they must be found in what other people have written, in existing texts. To learn how to write for newspapers you must read newspapers; textbooks about them will not suffice. For magazines, browse through magazines rather than through correspondence courses on magazine writing. To write poetry, read it. For the conventional style of memoranda in your school, consult your school files.

All this seemed so self-evident, once I dispelled my own illusion that prescriptive instruction could and had to suffice for conveying even a modicum of what writers need to know. All examples of written language in use display their own relevant conventions. All demonstrate their own appropriate grammar, punctuation, and manifold stylistic devices. All are showcases for the spelling of words. So now I know where the knowledge resides that writers require. It is in existing texts; it is there for the reading. The question is how does such knowledge get into readers' heads so that they become writers themselves?

The answer cannot be that all this specialized knowledge is acquired through deliberate formal analyses, by sitting down with the particular texts and making extensive notes, memorizing data and examples. What is learned is too intricate and subtle for that, and there is too much of it. There is not enough time. Instead it must be that the learning takes place without deliberate effort, even without awareness. We learn to write without knowing we are learning or what we learn. Everything points to the necessity of learning to write from what we read. This is the trick to be explained.

Learning As a Collaborative Activity

The alternative I have to propose is that knowledge of all the conventions of writing gets into our head like much of our knowledge of spoken language and indeed of the world in general, without awareness of the learning that is taking place. The learning is unconscious, effortless, incidental, vicarious, and essentially collaborative. It is incidental because we learn when learning is not our primary intention, vicarious because we learn from what someone else does, and collaborative because we learn through others helping us to achieve our own ends.

Consider the range and extent of spoken language children learn during the first four or five years of their lives. Miller (1977) estimated that infants must add words to their vocabulary at an average rate of one every hour they are awake, a total of several thousands a year. Young children learn grammars (in order to talk and to understand) with a complexity which defies linguistic analysis. They master a multitude of idiomatic expressions and intricate nuances of cohesion and register which most adults do not suspect that they themselves observe, let alone their children. They learn complex subtleties of intonation and gesture. All of this is done without formal instruction, with very little evident trial and error, and with no deliberate diagnostic or remedial intervention at all.

There is an exquisite selectivity. Children first begin talking like their parents, then like their peers, and later, perhaps, like their favored entertainment or sporting personalities. They do not learn to talk like everyone they hear speaking, even those they may hear most. They learn the language of the groups to which they belong (or expect to belong) and resist the language of the groups that they reject or from which they are rejected. They learn, I want to say, from the clubs to which they belong.

This pervasive learning extends far beyond the structures and customs of language to mannerisms, dress, ornamentation, and larger patterns of behavior in general. It takes place in the absence of overt motivation or deliberate intention (as all of us know who come away from a film or a book acting the part of one of the characters). Engagement is the term I have used to characterize such learning (Smith 1981*a*). It is not learning that takes place as a consequence of someone else doing something, but rather learning that occurs concurrently with the original act—provided it is our act too. The other person's behavior is our own learning trial. We learn when the other person does something on our behalf, something which we would like to do, which we take for granted.

Adults have neither the time nor the expertise to teach spoken language to children. Instead, they act as a source of information for children and as unwitting collaborators. They are overheard as they talk to each other, and thereby show children why and how speech can be used. They demonstrate language being used for purposes which children would expect to accomplish themselves. Often the explanation of the language is embedded in the situation in which it is used—someone says "Pass the salt" and someone else passes it. Television is replete with such examples, especially in the commercial announcements. Sometimes the explanation is explicit, as adults or peers elaborate upon a meaning for a child, though the intention is no more deliberately pedagogical than it is when a child is told "Look, there's a McDonalds." And when a child wants to say something, an adult or a

friend helps the child to say it. No one gives a child struggling to be understood a low grade and a kit of instructions. But children do not need to be personally involved to learn to say what they would like to be able to say. They learn when others do the talking for a purpose they want or expect to share. In effect, adults and peers admit children to the club of people who talk as they do. They do not expect children to be experts in advance, nor do they anticipate failure. There are no admission requirements.

In such circumstances, children learn from what they overhear by "listening like a talker." They do not regard the language they learn from as something remote, an attribute of others, but rather as something they themselves would want and expect to do. They become "spontaneous apprentices" as Miller (1977) felicitously puts it, engaging in the enterprises of the adults or peers who are their unsuspecting surrogates for the trial and error of learning (and who since they are experienced tend to have a variety of trials and very few errors, a most efficient form of learning). The only source of the complex and subtle language that children learn for their own social groups must be speech they hear in use, to which they can listen like a talker. And clearly, all children who can talk like their family and friends must be very good at listening and learning in this way. They must have been doing it since before the time they could say a word for themselves.

Obviously children do not learn about spoken language from everything they hear spoken. Sometimes they do not understand and sometimes they are not interested, two circumstances which all teachers know are not conducive to learning (except that something is confusing or boring). Obviously also, children (and adults) can pay attention and understand what is said without coming to talk like a particular speaker. We frequently "listen like a listener" when we attend to what is said but have no desire or expectation that we should come away talking like the speaker. We do not see ourselves belonging to that particular club; we are not that kind of a person, and the vicarious engagement does not take place.

The consequence of not being a member of the club is dramatic, for children and for adults. We do not learn. In effect, the brain learns not to learn, it shuts down its own sensitivity (Smith 1981*a*). Exclusion from any club of learners is a condition difficult to reverse, whether we impose it upon ourselves or have it imposed on us.

Collaboration with Authors

I have discussed how adults and more competent peers act as unwitting collaborators as children learn about spoken language. Children learn vicariously, provided they can "listen like a talker" by virtue of their implicit membership in the particular club to which the practitioners they hear speaking belong. My argument now is that everyone who becomes a competent writer uses authors in exactly the same way, even children who may not yet be able to write a word. They must read like a writer, in order to learn how to write like a writer. There is no other way in which the intricate complexity of a writer's knowledge can be acquired.

Most literate adults are familiar with the experience of pausing unexpectedly while reading a newspaper, magazine, or book in order to go back and look at the spelling of a word that has caught their attention. We say to ourselves, "Ah, so

that's how that word is spelled," especially if the word is a familiar one that we have only previously heard, like a name on radio or television. The word may or may not be spelled the way we would expect it to be spelled. It just looks new. We did not begin reading in order to have a spelling lesson, and we are not aware of paying attention to spelling (and to every other technical aspect of the writing) as we read. But we notice the unfamiliar spelling—in the same way that we would notice an incorrect one—because we are writing the text as we read it. We are reading like a writer, or at least like a speller. This is a word whose spelling we ought to know, that we expect to know, because we are the kind of person who knows spellings like this.

Here is a second example. Once more we are casually reading, and once more we find ourselves pausing to reread a passage. Not because of the spelling this time, nor because we did not understand the passage. In fact we understood it very well. We go back because something in the passage was particularly well put, because we respond to the craftsman's touch. This is something we would like to be able to do ourselves, but also something that we think is not beyond our reach. We have been reading like a writer, like a member of the club.

On neither of these two occasions would I want to say that we learn as a consequence of what we read. We do not turn aside from our reading to study the spelling or the stylistic device that we have noticed. If we learn at all, we learn at the first encounter, vicariously, concurrently. If we can write at all we must have learned much more than we are aware of on these occasions. In fact I am inclined to think that the new spelling or style attracts our adult attention because it is an exception, because we know the spellings of most of the words that we read. We must have been adding to our repertoire of spellings at a rate approaching that of children's learning spoken words, namely hundreds, if not thousands, a year. We were no more aware of the individual learning occasions than we were conscious of learning the meaning of all the words we know. It is only after the event, sometimes, that we realize that we have vicariously learned, when we find ourselves using words, phrases, and stylistic idiosyncracies of the particular author we have read.

I also do not want to say that even accomplished writers read like a writer every time they read. It does not happen when the attention is overloaded, when we have trouble trying to understand what we are reading. (How can one read like the writer of something one cannot understand?) There is not much opportunity to read like a writer when we are totally concerned with the act of reading, with getting every word right, or with trying to memorize all the facts. It does not happen when we have no interest in writing what we read. We do not come away talking like a telephone directory after looking up a few numbers. And it does not occur when we have no expectation of writing the kind of written language we read. The latter illustrates my essential point again, the learning occurs only when we perceive ourselves as members of the club. We can and often do read simply like a reader, for whatever purpose we are reading. But to learn to write we must read like a writer. This need not interfere with comprehension, in fact it will promote comprehension because it is based upon prediction.

To read like a writer we engage with the author in what the author is writing.

We anticipate what the author will say, so that the author is in effect writing on our behalf, not showing how something is done but doing it with us. This is identical to the spoken language situation where adults help children say what they want to say or would like and expect to be able to say. The author becomes an unwitting collaborator. Everything the learner would want to spell the author spells. Everything the learner would want to punctuate the author punctuates. Every nuance of expression, every relevant syntactic device, every turn of phrase, the author and learner write together. Bit by bit, one thing at a time, but enormous numbers of things over the passage of time, the learner learns through *reading* like a writer to *write* like a writer.

Of course, there is also a need to write, especially for beginners. Writing enables one to perceive oneself as a writer, as a member of the club, and thus to learn to write by reading.

There is also a need for a teacher or other practitioner to be an immediate collaborator with the learning writer, for support and encouragement and also to provide knowledge of technicalities which a text cannot offer. Such technicalities range from the use of paper clips, index cards, and wastepaper baskets to the nature and utility of drafts and of editing, none of which is apparent in published texts and none of which, therefore, the author can demonstrate. One might add to the preceding list all the emotional concomitants of writing and its blocks, which people who are not experienced members of the club rarely seem to appreciate and which are frequently not dominant considerations in classrooms.

The Teacher's Role

Teachers have two critically important functions in guiding children towards literacy: to demonstrate uses for writing and to help children use writing themselves. Put in other words, teachers must show the advantages that membership in the club of writers offers, and ensure that children can join.

Teachers do not have to teach children to read like writers, though they may indeed for a while have to see that beginners get help to read. And of course, teachers must help children to write—not teach them about writing—so that they can perceive themselves as members of the club. Teachers must also ensure that children have access to reading materials that are relevant to the kinds of writer they are interested in becoming at a particular moment; teachers must recruit the authors who will become the unwitting collaborators.

In particular, teachers must help children to perceive themselves as readers and writers before the children are able to read and write for themselves.

It is not difficult to imagine how children can be helped to read before they can read a word for themselves. Someone must do the reading for them. Teachers should not be afraid that a child who is read to will become dependent or lazy. Children able to read something they want to read will not have the patience to wait for someone else to read for them, any more than they will wait for someone to say something on their behalf if they can say it for themselves.

It is instructive to observe what happens as young children are read to. First someone reads *to* them (they listen like a listener). Then the other person reads *with* them (they listen like a reader). Finally, that most annoying thing happens—the

child wants to turn the page before the collaborator gets to the end of it (the child is reading). Of course, a teacher may not always have the time to read with an individual child, but it is not necessary for the teacher to take this collaborative role. Other children can do this, or children can read in groups, or other adults can be recruited. The important thing is to make the reading a natural activity, preferably one initiated by the child for the child's own purposes, whether that is to enjoy a story, to share a newspaper report, or to find out what is on the lunch menu or the television program for the day.

It may not be so easy to imagine how children can be helped to see themselves as authors before they can write a word. For a teacher (or some other collaborator) to act as secretary for the child, taking care of handwriting, spelling, punctuation, and so forth, is not enough. There are many other decisions and conventions with which a neophyte needs help, as the following illustration will show.

The aim must be a collaboration so close that a child feels personally responsible for every word in a story (or poem or letter), even though the child did not think of a single word in the first place. First the teacher and child have to establish that the child will write a story, that the child is to be an author. The following dialog ensues:

> Teacher: What do you want to write a story about?
> Child: I don't know. (The child's problem is identical to that of a university student confronted with writing a dissertation, not that there is nothing to be written about, but that the number of alternatives is overwhelming.)
> Teacher: Do you want to write about an astronaut, an alligator, a wicked witch, a baseball star, or yourself?
> Child: An astronaut.
> Teacher (writes down the title): How does the story start?
> Child: I don't know.
> Teacher offers some alternatives, the child decides, the teacher writes.
> Teacher: What happens next?
> Child: I don't know.

And so on. . . Always the teacher offers some alternatives, and the child decides. This is especially important at the end. There is a myth that children (and many university students) can produce only very short texts. But with appropriate incentive they can write on and on, until in principle I suppose the entire contents of their heads is unravelled. The child's problem (and that of the university student) is most likely to be lack of an appropriate convention for ending. If you do not know how to stop you might just as well stop now. So the teacher must offer a choice of exits.

And when they are done the child feels responsible for the entire story, as indeed the child was. This was a collaboration, and the story would not have been written as it was without the two parties who were involved. It makes no more sense to talk about who did what than to ask who carried which part if teacher and child carry a table together which neither could carry alone.

To become writers children must read like writers. To read like writers they must see themselves as writers. Children will read stories, poems, and letters differently when they see these texts as things they themselves could produce; they will write vicariously with the authors. But to see themselves as writers they need

collaboration from an interested practitioner.

There is no way of helping children to see themselves as writers if they themselves are not interested. That is why the first responsibility of teachers is to show children that writing is interesting, possible, and worthwhile. But there is also no way of helping children to write if the teacher does not think writing is interesting, possible, and worthwhile. Teachers who are not members of the club cannot admit children to the club.

How can teachers learn to see themselves as writers? They must learn to read like writers themselves, and to do that they must, like children, collaborate with people who are also engaged in the enterprise of writing. For most teachers this should be easy—they can write with their own students, in a collaboration so close that no one can say to whom the successes and failures belong. What matters is not how well teachers or students may write when they write together but the manner in which they will read when they regard themselves as writers. Teachers who write poetry with children will find themselves reading poetry differently; they will be reading like members of the club of poets. And as members of the club, they will learn.

Overcoming the Constraints of School

Unfortunately schools are not always good places for children to see themselves as members of the club of writers. The membership fees may be beyond many of them. The way in which schools are organized does not encourage collaboration; it favors instruction over demonstration, and evaluation over purpose. A "programmed" approach can reduce literacy to ritual and triviality for many children (Smith 1981*b*) and leave little time for engagement in meaningful written language. Teachers can never be collaborators with children who regard them as taskmasters and antagonists.

The pervasiveness of the drills, exercises, and rote learning of programmatic literacy activities is such that some teachers tend to lose touch with what writing is really for. I can offer a short and incomplete list that will encompass more writing and reading than is possible in any school day.

Writing is for stories to be read, books to be published, poems to be recited, plays to be acted, songs to be sung, newspapers to be shared, letters to be mailed, jokes to be told, notes to be passed, cards to be sent, cartons to be labelled, instructions to be followed, designs to be made, recipes to be cooked, messages to be exchanged, programs to be organized, excursions to be planned, catalogs to be compared, entertainment guides to be consulted, memos to be circulated, announcements to be posted, bills to be collected, posters to be displayed, cribs to be hidden, and diaries to be concealed. Writing is for ideas, action, reflection, and experience. It is not for having your ignorance exposed, your sensitivity destroyed, or your ability assessed.

So how can teachers help children see the advantages and possibilities of the club of writers, despite all the constraints of school? As I have argued before (Smith 1981*b*), teachers must engage children in purposeful written language enterprises as often as they can and protect them from the destructive effects of meaningless activities which cannot otherwise be avoided. The first step is for teachers themselves

to be able to distinguish between meaningful writing and senseless ritual, and the second is to discuss the difference with the children.

In particular, teachers should try to protect themselves and children from the effects of evaluation. Where evaluation and grading are unavoidable, as they so often are, it should be made clear to children that they are done for administrative, bureaucratic, or political purposes and have nothing to do with "real world" writing. Grading never taught a writer anything (except that he or she was not a member of the club). Writers learn by learning about writing, not by getting numbers put on their efforts or their abilities. Children (and university students) who will write only for a grade have learned a very odd notion of what constitutes the advantages of the club of writers.

This is not a matter of "correction," which in any case does not make anyone a better writer. Correction merely highlights what learners almost certainly know they cannot do in the first place. Correction is worthwhile only if the learner would seek it in any case, and to seek correction for what you do you must regard yourself as a professional, you must be a member of the club. I am not saying there should not be standards, but that the standards have to come from what the learner wants to achieve. Emphasis on the elimination of mistakes results in the elimination of writing.

It is difficult for many teachers not to see evaluation as a necessity. It probably pervades the atmosphere in which they work. They may not have been told of its devastating effect on sensitivity or of its inevitable relationship with meaningless activity. Writing done for a purpose requires and permits no evaluation beyond fitness for that purpose, which can only be assessed by the learner by comparison with how the same purpose is achieved by more experienced members of the club. But that is always how children learn; they need not be told to find the better way for doing what they want to do; they look for it. Children never want to speak an inadequate version of the language of the groups to which they adhere, any more than they want to dress in a less than conventional way. If they are members of a club they want to live to its standards. A child who does not want to learn is clearly demonstrating exclusion from the group, voluntary or imposed.

School should be the place where children are initiated into the club of writers as soon as possible, with full rights and privileges even as apprentices. They will read like writers, and acquire full status in the club, if they are not denied admission at the threshold.

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Reading and Writing As Meditation

Reading and writing are ways of modifying inner speech, which comprises the more verbal currents of our inner stream. Reading and writing temporarily change how we talk to ourselves. Eventually this may change how we feel and think. The power to modify our stream of consciousness is something reading and writing share, something they do differently than do other activities, and something they do differently one than the other. A valuable way of approaching the relationship between reading and writing may be to explore these similar and different ways of influencing consciousness.

Consider what happens when we read. The text does not register on a blank. The inner stream of thoughts, feelings, and images that flows unceasingly in us virtually all the time, even in sleep, does not stop when we open a book, but it does adapt drastically to this act, because what comes off the page is another thought stream. What happens when one thought stream is integrated into another? Specifically, different things happen, of course, according to the nature and maturity of the individual mind, but generally, the text structures the stream of consciousness during the act of reading if the reader is attending to it with reasonable interest and incentive. (The text will usually influence even the mental digressions.) This means the text is in some measure supplanting some other structuring activity—socializing, working or driving, playing a sport or musical instrument. Some activities influence the inner stream far more than others, because they require closer attention and permit less inner meandering. The less an external activity engages our thought and attention, the more some internal activity takes over the stream—recollection, reflection, fantasying, and so on. It is by no means idle to define an activity, precisely, by how it affects the stream of consciousness. What are the effects of reading?

Reading

Reading demands consistent close attention. It immobilizes you and holds both eye and mind—and commands the mind's eye. Though aspects of it become automatic, like driving, it engages imagination and intellect far too much to encourage mind-wandering, except during pauses, when the reader may ruminate over what he has read. Playing a sport or musical instrument or doing certain non-repetitive craft activities also controls the content and continuity of consciousness by imposing their content and continuity on the inner stream, which must cleave to these because of the concentration required. Reading differs from these other close-attention, structured activities by a critical factor: its content and continuity are the product of some other human being's inner stream, that is, a written composition. A text is structured by a mind, and the medium is symbols. The focus of reading, therefore, is very inward regardless of how external may be the referents of the symbols, the subject matter.

To arrive at the precise qualities of a thing one must winnow out what is unique to it (not necessarily superior). The uniqueness of reading emerges further as we pass on to a comparison of texts with other human compositions that move in time—films, music, dance, drama. These too differ from street scenes, chance encounters, and other unplanned activity in being compositions, which by their nature make us feel the presence of another mind. In this way a book and a film and a ballet are alike. But compositions in different media engage different faculties at play in the inner stream—sensory perception, imagination, emotion, memory, intellect. The "lively arts" like music, dance, and drama certainly stimulate our senses more and, by their powerful atmospheric effects, grip more our organism as a whole. (If you are participant, the performing arts affect you more as sports or martial arts do, whereas, if spectator, they affect you more as a book does.)

The sensuosity of the non-verbal media does not mean that they convey no meaning, nor is it true that language alone is symbolic. Forms symbolize inner things for us, especially the forms that make up a composition, and the sensory forms we witness in dance and music and art act as metaphors to "speak" to our sensibility. So non-verbal compositions also engage our memory and intellect and imagination, but to the extent that they present sounds and sights directly, they draw less on the imagination than does a text, which requires the reader to visualize and to play out action and setting for himself on the stage of the mind. And here is the real difference. Reading engages emotion and memory and imagination by means of the mind, because it is words not deeds or sights or sounds that elicit response. Imagery is conjured from words, emotion sprung by words, and ideas generated by words. Everything in a text is mediated by the reader's conscious intelligence, whereas the non-verbal media excite our faculties directly, as the natural forms and patterns of life itself do. Language symbolizes *concepts*, which the mind must *apply* to stored experience, whereas film imagery or dance movement or musical progressions stand for inner equivalents by some organic similitude, whether these inner equivalents are named and conceptualized or not. Consider the meaning, for example, of certain musical dynamics such as crescendo or staccato. It is this mediation by mind that distinguishes language and makes a written composition act in a unique way on the stream of consciousness.

When we read, we introject the text into our inner life and at the same time project our inner life into the text. This is a heady interaction. On the one hand, reading *supplants* our inner stream with someone else's to the degree that we do give ourselves over to it in rapt absorption. On the other hand, we also "read into" the text much that is not said there. Some of this reading-in serves the author's intention, inasmuch as a text can't say all and relies on the reader to fill in sensible implications. Some reading-in is distortion peculiar to a given reader—subjective "projection" in the psychologist's sense or biased selection and emphasis of an author's points or details. The reader may dialogue with the author or characters, kibitz, comment, cheer or jeer, and otherwise sustain a running response. The novice reader may—as we know from analyzing "miscues" when he or she sight-reads a text aloud—add, delete, or substitute some of the syllables, words, or punctuation marks, not to mention paraphrase and translate into his or her own dialect or idiom or understanding in order to ensure meaning. The scholar may annotate the margins with questions, exclamations, citations, glosses, and mini-essays. All of us may extend the text or spin off from the text by fantasying, recollecting, and reflecting—setting off trains of thought that may actually interrupt the reading but are in any case one way in which the text influences the inner stream. This interlarding, overlaying, or punctuating of the text constitutes some portion of our inner stream while reading, in addition to the rendering in the mind of the text itself with more or less fidelity or revision.

An interesting and valuable way to contemplate readers, reading, and texts concerns, in fact, the ratio between introjection and projection. Children between ages eight and twelve, for example, tend to open themselves to the text with unusual receptivity, holding ego in abeyance, with the result that the text very nearly *becomes* their inner stream, give or take some unconscious deformation or adjustment to fit their psyche. Not surprisingly, this is the same period (of "latency" before puberty) when people are most suggestible, most acquiescent in hypnosis (which is usually voice-induced, we note). Psychologist Ernest Hilgard made this connection with rapt reading while conducting research correlating personality variables with hypnotic susceptibility. This acquiescence corresponds, in reading, to the willingness to make someone else's inner life temporarily one's own. While it no doubt accounts partly for the fact that many people read more at this age than at any time later, it also characterizes how numerous adults habitually read or how they read certain kinds of books. The hyperbole of blurbs—"spellbinding," "enthralling"—expresses the state booksellers would like to see the reader in and which in fact does occur when we "suspend disbelief," silence our own inner voices, and give ourselves over completely to what authors have composed of *their* inner lives. Textual hypnosis may be a factor of the reader's personality and age, of the nature and art of the text, or of some mental set or reading process acquired from experience. It may also be a factor of the kind of discourse—whether fiction, true narrative, poetry, essay, informative article—in relation to a personality. What enthralls *you*?

The "getting lost in a book" represents one extreme of how reading structures inner speech or the total inner stream. It is like a benign "possession" permitted by the reader in just the way that psychologist Lawrence Kubie hypothesized that creative people let their unconscious take over for a while without fear that they will

lose control or not return. Just as Kubie relates "creativity" to "regression in the service of the ego" so Hilgard connects rapt reading and hypnotic susceptibility to a strong ego structure that *knows* it will return after temporarily ceding sway to another force. Perhaps most important of all, "losing oneself" in a book or a surge of creativity makes a person feel liberated and happy, "beside oneself" with joy. The sensation of introjecting a ready-made inner stream—from an author or from the unconscious (perceived, precisely, as another)—is that we "get out of ourselves." This is understandable, because the feeling of being oneself is of recognizing one's inner speech, which repeats personal and cultural patterns. Alter the inner stream and we feel like someone else. So when we speak of reading for "escape," we must mean, as much as anything, escape from the closed circles of our habitual thinking, which reflects our troublesome outer circumstances in the form of worry and problem-pondering.

Even the margin-annotating scholar at the other, detached extreme of reading response partakes of this feeling as he or she gets "carried away" by ideas stimulated by the text. In approximating a co-author by so copiously amending and appending, our scholar is projecting also. The text has got hold of his mind, and he too is concentrating so intently that the subject-object separation is dissolving. Maybe he is not introjecting or projecting less than the ten-year-old but is interacting at a more verbal and conscious level. He is aware and can formulate his responses in words; he knows where the text ends and he begins, at least intellectually. But maybe his conscious, verbal responses do not cover all of his engagement with the text. Suppose his very intellectual excitement and professional commitment cause him to fall under a spell too—in addition to critiquing and extending the ideas he finds there. At any rate, while reading, his inner speech fuses the author's content and continuity with the responses they evoke from himself, and this interweaving forms a revised content and continuity inasmuch as text and response form a single inner flow. This collaboration between author and reader probably occurs no less between the rapt ten-year-old and his story but does not appear to do so because the child's responses are too unconscious and subverbal to manifest themselves. So we arrive at the fascinating paradox that introjection and projection are really the same thing viewed from different angles.

In stories for all ages, actual and fictional, we usually acknowledge that the reader's identification with key characters is paramount. This identification occurs as part of introjecting and projecting, of suspending for a while the demarcation between *I* and *he* or *she*. The concept and practice of bibliotherapy are based on it—that while we are "being" So-and-so we can expand our self and our experience to include those of the character in the story, who may change or find a solution that we still have not. Identifying helps people grow because we imaginatively incorporate into ourselves the needed features and experiences of the character that go along with the familiar part of him or her that permits the identification in the first place. This incorporation of character into reader corresponds to the way the reader assimilates a text into the ongoing stream of consciousness. And metabolism may be an apt metaphor because of its two-way action. Our perpetual inner stream compares to enzymes that re-make to a degree what is ingested so that our body can integrate this foreign substance into our existing system.

Again, through identification, the reader "gets out of himself." Too seldom do educators examine why stories have such powerful and universal appeal. Stories make up the largest part of popular reading, and identification is the key to much of this popularity, as authors, teachers, parents, and librarians all find out sooner or later. The personage in the story—real or invented—does not have to be like me if it resembles what I would like to be. Identification typifies the function of stories generally—to fulfill myself by letting me get out of myself for a while, to escape to the more abundant not-me and complete the potential me.

So all this is about growth, yes, but the *process* of the growth occurs specifically by *modifying inner speech*. We have to change—enlarge—how we think, alter consciousness, because anyone's life spells limitation. Children just admit this more readily. This is the real "escape," not from reality but toward it. So long as we are trapped within the circuits of our routine thoughts, confined to our ordinary consciousness, we remain arrested within the bounds of our necessarily limited experience. Quite without planning or realizing what we are after, we seek ways of getting out of ourselves, of eluding the re-runs, the self-haranguing, the re-cycled inner speech that perpetuates our limited and false notion of reality. Limitation is mental circling. We maintain by our old thoughts and feelings a dead world, false because restricted to a certain ego and culture. We want break-throughs, break-outs. But we don't know we do. We read for other reasons, we believe—for entertainment and information. But that is the same thing. To "entertain" means literally to keep a continuity going. Our inner continuity, left to itself, is too conditioned and habit-ridden. It needs intervention, we intuit—but of our own doing. Reading one does oneself, and one controls it (except perhaps in school).

Through reading we seek outside continuities from other people, to shuffle us up, re-structure our consciousness, entertain us, continuities that give pleasure because they take us out of ourselves and release us a little at a time from our mental cage. Reading can do this quite well if we can choose the texts and the circumstances so that incentive stays rooted in this deep impulsion toward self-expansion and higher consciousness. Stories in particular are popular at all ages because they offer, besides personages with which to identify, the familiar continuity of time order and the concreteness of physical actions, objects, and settings. The plot of a made-up story or the chronology of actual events guarantees *enchainment*, that meaningful continuity that sustains us in place of the all too familiar patterns of thoughts by which we "entertain" ourselves. Stories surprise too. What happens next? As our minds mature, we find satisfaction in other, more abstract kinds of continuities as well—the logical and psychological enchainments of ideas and images that make up other discourse such as essay, poetry, theory. Adding these other continuities to chronology represents itself one way we expand original constraints. Trying on, trying out others' minds, hearing out the world, gradually enlarges consciousness to more nearly embrace the world.

Writing

Introjecting others' compositions into our inner stream is not the only way to modify it. Another way is to manipulate our own inner speech so as to redirect and

transform it. Writing is such a way. In fact, we may perhaps think afresh about writing by regarding it so. So far I have mentioned composition only for its effect on the reader. Consider now the effect on consciousness of creating a composition. To do this we must define writing as authentic authoring, not merely as some sort of glorified plagiarizing, because it is the act of real composing—"putting together" for oneself—that modifies the stream.

Let's define writing, in fact, as precisely this modifying—as narrowing, focusing, editing and revising inner speech. On the one hand, writing is just writing down inner speech, transcribing thoughts, self-dictation. But as stenographer to oneself, one does not write down everything and any old thing that pops into the head. Indeed, by setting some subject before himself at the outset, a writer directs his inner speech toward greater selectivity as compared with its more miscellaneous nature when left to the vagaries of random inner and outer stimulation. The writer then proceeds to develop the subject along some sort of chronological, logical, or psychological progression that provides the continuity or enchainment that carries the reader out of himself when he incorporates it.

Constructing that continuity does for the writer what following it does for the reader. But if the writer composes this out of his own innards, how can it be new for him, take him somewhere he has not been before? This is where the discovery aspect of writing, so much talked about today, comes into the picture. What is new in composition are *connections*. Composing connects. The bits and pieces of thought, memory, feeling, and imagery lie within already, it's true, but old habits keep turning these over in the same patterns or simply ignoring them. Without a special countering effort, these patterns are fixed enough by mental and emotional sets so that much of our rich store of material stays side-tracked because these valuable fragments can't connect with the current tracks our mind is shuttling around on. (Where there are thought trains there must be thought tracks!) The act of composing necessarily rearranges our store of inner material.

How does it do this? How is it that in transcribing inner speech we surprise ourselves and think thoughts we have not thought before? Don't we figure out what we want to say and then just write it down? Maybe, but this "figuring out" entails some very important processes that go on recursively, that is, by revolving among stages of jotting down ideas, reacting to these, reflecting on the subject when not writing, and revising earlier writing. This is how composing proceeds, and the heart of it—the inner equivalent of the recursive paper progress—is the focusing, editing, and revising of inner speech. In other words, the very features of a composition that any reader expects—coherence and continuity of content, or unity and development—do not characterize the ordinary movements of our inner speech. They represent, rather, a superimposition of a structure from outside the stream itself, from the will—that corresponds to the introjection of the text for the reader. The deliberate selecting of images and ideas, and of words themselves, not only breaks up routine and random inner streaming but *sustains the development of a subject beyond what we have thought or imagined about it before*. This is discovery. The composing process requires exactly the rearrangement of experience that jogs loose unused material and connects the heretofore unconnected.

Much of composing is for the reader's benefit, is rhetorical, for effects. In

writing we do not merely put our thoughts in order, or get our story straight, we put our thoughts in order to get our story straight *for someone else, for a purpose.* This effort too, to use thought and language to act on others acts on the writer also, because it is a factor of contrivance that tends to meddle further with old inner patterns, which are as they are partly just from habits of privacy, or even solipsism. The writer puts herself in the shoes of the reader (gets outside of herself or introjects the "other"). What does the reader need or want? How can I surprise, awe, appall, sadden, amuse, arouse, lighten, enlighten the reader? The writer *casts about,* tries out, reworks—on or off paper, it doesn't matter—seeking ways and means. The composition evolves during the rhetorical process of getting it right for an audience and a purpose. The results show on paper, but the evolution takes place in the author and affects her consciousness as she works out ways to affect the reader's. Putting a version on paper aids memory and prompts revision. Writing down what one thinks acts reflexively to influence what one may think next. To this process of self-stimulation and self-cuing may be added feedback from a trial audience—advance reactions in order to sample the effects of one's composing so far. Incorporating this outside viewpoint may inspire further revision, not only of the composition but of the author's consciousness. Audience reaction at any point, in fact, can act as a powerful agent to break the inner monopoly.

Composing is also playing. The beauty of play is that it licenses the mind to frolic outside the usual constraints set for it by the consciousness-structuring of that fanatic, self-serving entrepreneur, the ego. A composition is always some more or less artful or unskilled creative plaything. Not just literary creations but factual articles, documentary narratives, and theoretical essays all raise for the author decisions about phrasing and fashioning, about balance and proportion, pace and rhythm, style and tone, dynamics and progressions. These are all toys to play with as well as utilitarian means to get the job done. They are elements of composing in other arts and media. Above and beyond fulfilling the logical and rhetorical needs, composing is crafting and, constructing, kin to what children do when they make something just to make something. A writer sports with language, images, and ideas for pleasure just as an artist does with the elements of *her* medium—color and light, form and space, mass and movement. Composing, with words or otherwise, is playing to the extent that making anything has intrinsic gratification. Play is gratuitous, eludes determinism, and subverts ego. It plays a part in helping writing to liberate the inner stream.

But if writing is at bottom manipulating and modifying inner speech, can't it just be done in the mind without actual physical writing? Yes. Such a way is called meditation, which is composing the mind. The best way to appreciate the relation between reading and writing that I am developing here may be to relate them both in turn to another activity that *specializes* in transforming the inner stream. Various practices are lumped together under the concept of meditation, but I define them all as ways of raising consciousness by modifying inner speech.

Reading, Writing, and Meditating

Some meditation techniques simply slow down the stream so we can become aware

of it and examine it without otherwise altering it. Even this consciousness of consciousness already resembles the reflexiveness, the introspection, the concentration required for writing. The writer has to feel her reality as a thinking reed having some power of control over thought. Other kinds of meditation resemble writing rather directly in that one assigns oneself a topic, focuses the mind on it, and develops it to a climax. This differs from ordinary cogitation by an extraordinary intensity of focus and by an equally unusual integration of all faculties of heart and mind—of emotion, perception, memory, imagination, and reason, which are brought to bear simultaneously on the topic in order to break through to new understanding of it. In the process of achieving this breakthrough, consciousness itself shifts into a more exalted state. The rarest form of meditation consists of entirely stopping for a while the flow of the inner stream. One slows it so much and focuses it so finely that it stops—becomes "one-pointed." Consciousness is altered indeed, and drastically in this case, because this meditation reaches the ultimate in "getting outside of oneself."

Whereas the first form of meditation consists of *witnessing* the inner stream and the second of *focusing* it, this last amounts to *suspending* it altogether. What happens when for a while we simply quit sensing, imagining, recalling, and thinking? This is something we should answer for ourselves by arranging the experience itself, but it is safe to say that in suspending inner speech one is bypassing ego and culture with their partial and conditioned conceptions of reality and making possible an unmediated attunement to the world resulting in revelation and ecstasy. The original and non-romantic meaning of "ecstasy" is being outside oneself.

I see no reason, aside from convention, not to regard reading and writing as forms of meditation. All three are deliberate activities that a person initiates in order to meddle with his or her mind. Specifically, they modify the inner stream during the act itself, produce at their most intense an altered state of consciousness, and over the long haul liberate the patterns of perception and thought in the direction of expanded or higher consciousness. Reading assimilates one person's composed inner speech into another person's on-going inner stream so that one's composition temporarily restructures the other's consciousness. Writing temporarily restructures one's own consciousness as one focuses, edits, and revises the inner stream so as to act on another's. Reading and writing have other functions such as to instruct about mundane matters, but even these take their place in the bigger picture of transforming oneself, or raising consciousness; and the more reading and writing represent unforced personal choices the more this analysis is true.

All activities may occasion some modification of consciousness, the more so as they entail *single-minded concentration*. Reading and writing are not necessarily superior to some of these such as musical performance or martial arts, which certainly preclude mind-wandering or obsessing, but reading, writing, and meditating induce and sustain concentration to an extraordinary degree *on the inner world itself*. Reading and writing more nearly specialize than other activities in transforming inner speech and more nearly *avow* doing so. As the *most* specialized and avowed means of controlling and changing inner speech, meditation represents the archetype toward which reading and writing both tend. Reading and writing control

inner speech by allowing a text to structure it or by structuring it to create a text. Meditation dispenses with the text in an immediate sense but may well follow the reading of one or lead to the writing of one. Practicing meditation may facilitate reading and writing and may benefit from them in turn.

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II Composing and Comprehending: Sampling the Research

We started by giving the same definition to both reading and writing: They are composing acts. —Don Graves and Jane Hansen

Good reading, like effective writing, involves generative cognitive processes that create meaning by building relations between the text and what we know, believe, and experience. —M. C. Wittrock

Style is one facet of writing ability that seems especially dependent on reading for its development. —Elizabeth Church and Carl Bereiter

Not only is writing important for itself, but the strong relation of writing to reading and language suggests that the development of writing may also enhance reading and language. —Jeanne S. Chall and Vicki A. Jacobs

. . . language arts instruction would benefit, it seems, from texts that help children learn to decode and, at the same time, provide models representative of literary prose. —Barbara Eckhoff

. . . the idea that functional relationships exist between early reading and writing concepts is still a new and speculative one. —Darrell Morris

Don Graves
Jane Hansen

The Author's Chair

The Author's Chair is where the reader sits. Randy, a first-grade author, reads a page from one of his published books: *I Went Bottle Digging*. Then he turns the book to show the pictures to the class assembled on the carpet in front of him. When he finishes the book he places it on his lap, "Now."

The acceptance begins, "I liked the part where you get dirty. I liked the part where you found the pottery."

The questions follow, "What do you do with the money when you sell them?" "Why did you choose this topic?" "How do you feel about being an author?"

Each day in Randy's classroom the children take their turns reading from the Author's Chair. They read their own published books and trade books. The teacher also reads the children's published books and trade books from the same chair. Of the four situations, in only one case is the real author on the chair. But, it is always the Author's Chair.

Whether the story is about Anatole, or Jeremy's new piece on his dirt bike, the process of responding to each work is the same. First, the children receive the work by stating what they think it contains, then they ask questions of the author. When the child-author is present, the child answers the questions. For the authors of trade books, the teacher and children together speculate on answers the author might give. The prestige of the chair grows throughout the year.

The author's chair is in the first-grade classroom of Ellen Blackburn in Great Falls School, Somersworth, New Hampshire, a working-class community. The two of us interacted with the children in Ellen's classroom at least twice each week throughout 1981-82 and will continue during 1982-83. Our intent is to formulate hypotheses about the development of the children's understanding of the relation-

ship between reading and writing. We started by giving the same definition to both reading and writing: They are composing acts.

Then, because no study had ever been done with beginning writers and readers on the two composing processes simultaneously, we used case study as the principal method of investigation. We studied three children who represented low, middle, and high achievement levels. This meant biweekly data collection through video, audio, and hand recordings of the children composing and conferencing in reading and writing. Also, we asked the children questions from ten different protocol sheets. When the case study children were not composing, we gathered data on the other twenty children in the classroom. The Author's Chair became an important point to examine children's concepts of authorship as well as the relationship between reading and writing.

The Classroom

The children read and wrote every day. They lived in a community of authors who were constantly reading and writing. They viewed other children composing books, and reading the words of Freddie, Jennifer, Ezra Jack Keats, Dr. Seuss, or Holt, Rinehart and Winston. They were both audiences and writers.

They kept all their writing in their writing folders and published in hard cover about one out of every four pieces. These published books are placed on the bookshelves in the classroom library along with the published books of professional authors. Each published book has a biographical statement about the author at the end. This writing, in both its invented spelling form and published form, is the center of instruction for reading.

Most of the children's writing is done at one time of the day with reading handled at another time. But the distinction is misleading; much reading is done during the writing, or writing during the reading time. For example, one day when Charley came to the writing table to illustrate his newly typed book waiting for publication, he spontaneously reread his book before coloring. Joey, seated next to him, asked, "Will you teach me to read it?" Soon Robbie, seated on the other side of the table, got up, walked over and asked, "Will you teach me too?" When Charley finished teaching, Robbie said, "Now do you want to learn how to read mine?"

Each week a child is chosen as Author of the Week. This means the child's photo is placed on a bulletin board along with a list of the child's published book titles. The books are in pockets and other children post comments about the author's books. The author chooses his or her own published, favorite book and the teacher makes five copies for the other children to read during reading time. During this week the child reads his or her own books, basals, and/or trade books to the class.

Whenever anyone reads a trade book to the class the children are interested in the authors. When Ellen reads to the children she first gives background about the author, including other books composed. She doesn't separate the person from the work—the same procedure used for the children's own books. Soon children become known for the books they have written, for the territory they have established, and are capable of defending it under the questions of the other children.

The prestige of the Author's Chair led to satellite chairs during the reading time. Children would gather their own copies of books, readers, trade books and read to clusters of children. Reading was a time for sharing, receiving the content of the selections and asking questions of the reader. During this reading time the teacher moved about listening, questioning the work of children, working with reading tools in phonics, and meeting with groups, but above all, focusing on the meaning of what the children were doing.

Development of the Author Concept

Three phases marked the children's growing understanding of the author concept: 1) Replication, 2) Transition, and 3) Sense of Option. We will give background for changes in the author concept in light of the children's composing in both reading and writing.

Phase I: Replication Phase
"Authors Write Books"

"Authors write books," answered most of the children when asked, "What do authors do?" We asked Ellen's students this question during September 1982 as part of a series of questions about their concepts of reading and writing. We followed it with, "Well, if authors write books, how do they do that? What do they do?" The answers followed no pattern; they varied from, "I don't know," to "Make a cover, then pages in there then they typewrite it, staple it together," to "Probably print up words." The author's process is invisible to the beginning first-grade child.

Earlier in this same interview we asked, "Can you write?" All the children answered, "Yes," and showed what they meant by drawing, making numbers, writing their names, writing letters or, for a few, even writing sentences. But after each child had written and we asked, "Are you an author?" few of the children felt they were authors. They knew their own ability to write was different from that of an author.

We also asked, "Can you read?" Several of the children surprised us by answering, "Yes," and showed what they meant by telling stories as they paged through familiar books, by mixing in repetitive words as they told a story, or by reading from early basals.

The children "play" their way into an understanding of reading and writing. They both invent and imitate their way into reading and writing. They observe and interact with the other children and Ellen as they read and write. They borrow certain conventions but demonstrate their own renditions of how to compose in each process.

They invent and imitate versions of writing through drawing, spelling, and various uses of the page. Their words change from erratic placement on blank spaces and around drawings to more orderly lines reserved for the print. Children also share their versions of oral reading by imitating the intonation of others. They hold their book, "read," and share the pictures from a pseudo-author's chair when they are reading alone and they take part in impromptu sharing sessions during the reading period.

They imitate the appearance of writing when they invent the spellings for the words they want on the pages they write about their personal experiences. They imitate the appearance of reading when they invent their retelling of a story they have heard. They imitate the general processes and invent their own renditions.

In this phase the concept of authorship is a vague one. But they begin the long process of advancing toward a richer understanding of the concept by doing what writers and readers do: As writers they struggle to put their thoughts on paper and they talk about these thoughts with other writers. As readers they compose messages and ask questions about published stories. They play, they invent, they mimic when they compose in reading and writing and sitting on the Author's Chair.

Phase II: Transition Phase
"I Am an Author"

The author concept follows the publishing cycle in the classroom. The first published book appears during the first week of school and by October many of the children have had their first writing published in hard cover. Whenever a child publishes a book he or she reads it to the class. Their books are displayed alongside those of the professional authors read to the class. The author concept begins to become real as more and more children publish books.

As the children take part in the publishing cycle from drawing, to writing, to the making of the book, and sharing it with the class, they begin to understand the chain of events that leads to authorship "Cindy is an author. She just got her book published."

The children start to identify with professional authors when they become aware of the prominence of topic choice. They think about what they know and make a decision. Usually they write about personal experiences. Professional writers choose their own topics and these children do likewise. They look at the content of trade books with the assumption the author is relating personal experiences. After reading a book to the class, Ellen frequently asks, "How do you suppose the author chose this topic?" One day she had read a factual book about barber shops and the answer to her question was by now predictable, "Rockwell must have just been to the barber shop."

The children project more than experience to the professional writer. One day Don Graves was not at the research site and one of the children asked, "Where is Mr. Graves today?" Jane Hansen replied, "He is at home writing his book." "He's doing the same thing we are," the child said casually.

The children think they know authors as persons. For example, Bill Martin becomes an early favorite because of his collection at the listening center. His books are some of the first ones they learn to read: "I can read my own book and Bill Martin Junior's book about the brown bear."

During this phase the children gradually show greater precision in their use of print. Although art work in reading and drawings in writing are still important, the transition phase is marked by more interest in print. Their decoding and encoding skills mature so they view the information in the illustrations as an extension of the text, whereas in the inventive phase the drawing was of primary importance. Now

the child sees the print as a necessary adjunct to the drawing. Whereas the drawing (when writing) and the illustrations (when reading) were dominant in the inventive phase, now there is a more complementary connection between the two. In their published books they draw a picture for every thought they express in words. The child sees pictures and print as an organic whole, a necessary precursor to seeing the distinctive functions of each.

The reading and writing in this phase take on different forms. The writing becomes more internalized. There is less oral composing during writing; they can write some words without producing every sound orally. The reading process evidences itself in just the opposite way. More and more sounding is heard. When we ask the children what they do when they read and write in this phase the response is the same as in the inventive phase, "Sound out the letters," even though it is less true of what they do when they write and more true of what they do when they read. A further query produces a glimmer of their process awareness, "Some kids still memorize their books, but I sound out when I read."

Gradually, more of their attention shifts to broader units of involvement in the composing processes. Rereading may go back several words and even several sentences in order to decide which word comes next. When they write, they reread before almost each new word. When they read, they reread when the message is interrupted by sounding out a word. The children do an abundance of rereading as they strive to make meaning.

This context broadens because of the events around the Author's Chair. As they receive and question books their questions involve the information in the stories. They ask, "Why didn't you tell why you still love your sister? Why didn't the author explain the way the goat felt?" In short, as the time-space units expand with the process moving back and forth between current word and broader text, the child begins to develop a sense of option. And as the child develops a sense of option, the authorship concept for self, other children, and professional becomes more distinctive.

Phase III: Option-Awareness Phase
"If I Wrote This Published Book Now, I Wouldn't Write It This Way"

The children's books no longer end with, "I feel sad," or "I feel happy." They can understand stories when authors write implied messages. Although they still expect most information to be explicit they now portray the mood of a story in their overall message. They expect their readers to compose a message when they read. They start to do this on purpose. One day Susan was reading a draft to us, "Do you like gym?" As she read she inserted, "Yes," and explained to us, "I won't put 'yes' in the published book. The kids will have to say that when I read it."

And one day when Steven read a new published book to the class someone asked him why he hadn't included a certain piece of information, "I thought you could figure it out." It is unlikely Steven had made this conscious decision as he was composing, but he does know that this is an acceptable assumption. Authors have the option of leaving some of the composing up to the reader.

In time they also learn how to handle the option of fictitious information. Jessica has sat in the Author's Chair both as a reader of her own books and trade

books. She has heard different points of view about content and author's intentions from the other children. One day when she read her piece about the death of her grandfather, her book sounded like a first person account. Richie asked, "Is this a true story?" Jessica replied, "Some of it is not. Most of it is true." Richie continued, "Which parts are fake?" Jessica replied, "The part where I said I went to the funeral." At this point the teacher asked Jessica about her options, "Why did you put it in if it's not true?" Jessica asserted, "I thought it made the story better." The teacher wants to reveal Jessica's option, the right of any writer.

At this phase the children are wrestling with such polar issues as true-untrue, imaginary-real, and explicit-implicit. As each becomes more distinctive, children develop a sense of option in interchanging them in their writing and reading. They learn that child authors and professional authors have options.

Children also discover that authors publish different versions of one story. "Hey, look, here's the same story but the words are different. I wonder why the author published it both ways."

The sense of option becomes real to the children because of the changes in their own reading and writing processes and because of the Author's Chair. Children both exercise and experience the effects of audience. When they share their own pieces and view the reception of the works of both classmates and professionals, they recognize the variance of opinion. Ellen encourages children to provide information to back their opinions, "Why do you suppose the author rewrote this book and published it again?" "Because the first one was sad." As children experiment, adapt, change their opinions they become open to options during the reading and writing process.

In the previous phase children read more for fluency. They read in order to share their accurate reading of words. The effects of the story on the listener were not as important as an accurate rendition of the print and the sharing of illustrations. The children read the book or rewrote the piece until it was "just right." The children already knew what the message was going to be because in reading they almost always chose stories they had heard before and in writing they related incidents that had happened to them. They didn't read and write to find out the product. They read and wrote because the process of putting together an already known message intrigued them. Now, the children reread and rewrite for layered meanings.

The children reread not with the conscious view of going after different levels of comprehension. Rather, the children reread to reenjoy characters, plots, and actions. But in doing so the child gathers a sense of option about the interaction of various components of the story. New meanings appear in successive readings. In short, the child "revises" the content of the piece read.

The actual reading performance changes as well. The children go back and forth within the paragraph or story in order to juxtapose part-whole relationships in the whole piece.

The writing process also involves an exercise of option. The children reread with more than a view of reorienting themselves in their emerging texts. Now they reread with a view to making the part under construction consistent with the overall intention in the piece. The child discovers inconsistencies and will choose to cut

and paste for reorganization, choose to organize a story by chapter in order to make it more clear, or write a complete second draft that includes, "a lot more information." The child rewrites with a sense of what the class will ask when he or she reads the piece from the author's chair.

When children are asked about how they read and write, their answers now show more separation between the two processes, "When I write I choose a topic. That's the hard part. Then I write drafts. Then I might publish it. When I read I choose a story, sometimes I can read it without lots of practice, then I might read it to the class." In both reading and writing, the children have a sense of process and are especially free of the "sounding out" component so dominant in earlier statements. Such freedom lifts the children into more thinking about information and the content and organization of what authors actually do in writing.

The children do have options. They do make decisions. They decide whether to put information in their pieces or not. They defend their pieces when the class asks questions. They question published authors. They respond to a story by accepting it and asking questions. Their responsibility as a writer is to anticipate questions from readers. Their responsibility as a reader is to ask questions of authors. They become assertive readers who expect authors to defend the choices they made when they wrote.

Hypotheses About Authorship

We did not know where the 1981-82 year would take us. We certainly did not know the Author's Chair would come to symbolize the relationship between reading and writing. Somehow, readers who are also writers develop a sense of authorship that helps them in either composing process. The above observations lead us to the following hypotheses about the relationship between reading and writing as it develops in beginning readers.

1. Children's concept of author changes from a vague notion about some other person who writes books to the additional perception of themselves as authors to the realization that they have choices and decisions to make as authors.
2. Children's concept of authorship becomes more pronounced as their concepts of reading and writing become more differentiated.
3. Authorship concepts become more differentiated because children actively compose in both reading and writing. Composing in each of these processes consists of imitating and inventing during encoding, decoding, and the making of meaning.
4. Children change from imposing their own understandings of process and content upon authors, to realizing various authors can use process and content differently.
5. Children realize authors have options because they do the following in both the reading and writing processes: exercise topic choice, revise by choice, observe different types of composing, and become exposed to variant interpretations.

6. Children who learn to exercise options become more assertive in dealing with other authors. At first an author is distant, then an author is self, finally the self-author questions all authors and assertive readers emerge.

The data for this article came from the first year of our investigation of the relationship between reading and writing. We could not have gathered these data if we had not been in a classroom in which the children had ample opportunity to both read and write. Our recognition of the importance of the author concept came because of the uniqueness of our field site. Since the significance of the author concept did not emerge until the second half of the year, we have started a new year-long study with a new group of children to examine the author concept in greater depth.

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M. C. Wittrock

Writing and the Teaching of Reading

In this article I will discuss the close relations between reading comprehension and effective writing, especially the generative cognitive processes involved in each of them. I will then present briefly a cognitive model of reading comprehension as a generative process. In this model, reading with comprehension becomes similar in important ways to writing with clarity. After the model is introduced, I will summarize several recently completed studies on the teaching of reading comprehension as a generative process. Last, I will suggest implications of this conception and our research for the teaching of reading.

Relations Between Reading and Writing

Reading and writing differ sharply from each other in the thought processes and human behavior they represent. These well known differences are summarized best by the commonly accepted belief that writing is the process of putting meaning on written pages, while reading is the process of getting meaning from the written pages. This conventional wisdom implies that writing is a constructive or generative skill, but that reading is essentially an imitative or reproductive skill. I believe that this conception of reading and writing leads us to misunderstand the nature of reading comprehension and to underestimate the difficulty of learning and teaching reading.

Good reading, like effective writing, involves generative cognitive processes that create meaning by building relations between the text and what we know, believe, and experience. The meaning is not only on the page, nor only in our memories. When we read, we generate meaning by relating parts of the text to one another and to our memories and our knowledge.

When we write with clarity we generate meaning by relating our knowledge and experience to the text. Writing also involves building relations among the words and sentences, the sentences in paragraphs, and the paragraphs in texts. In these important ways reading comprehension and effective writing relate closely to each other.

Reading and Writing as Generative Processes

Young children generate spoken, and sometimes written language, before they learn to read. In conversations, young children construct rule-governed, syntactically correct sentences that communicate meaning to others. In these social interactions young children generate meanings for the sentences they hear. We often take these remarkable generative, linguistic abilities for granted. Perhaps because they are so commonplace we overlook one of their fundamental meanings—that language is a generative, cognitive process beginning with very young children's conversations.

Equally remarkable is the finding that four- to five-year-old preschoolers, taught to write letters for sounds, generate written words and rudimentary sentences (KEN I STA DAOON STERS) before they have learned to read (Chomsky 1979). These invented spellings of children indicate again the generative nature of language, and some of the similarities that underlie reading and writing.

The Model of Generative Comprehension

Through their conversations and their invented spellings preschool children show that they approach speaking and writing as if they were generative activities. Before these young children learn to read they demonstrate generative language abilities, developed in social interactions involving conversations and simple written compositions.

From our knowledge of the generative language abilities of young children it is reasonable to ask if they learn to read in much the same way that they learn to speak, to invent spellings, and to write simple compositions. Have we misunderstood an important part of the nature and complexity of learning to read with understanding? Perhaps it is nearly as difficult to become an excellent reader as it is to become an excellent writer. Perhaps reading should be taught as a generative activity.

In my model of generative reading comprehension I explore these ideas, building upon an analogy between reading with comprehension and writing, speaking, and listening with understanding. Although reading differs in obvious and subtle ways from speaking, listening, and writing it shares important psychological and cognitive processes with them.

Briefly stated, the model includes three major components: generation, motivation, and attention. The essence of the model is that comprehension involves the reader's active *generation* of two types of semantic relations: 1) among the parts of the text, and 2) between the text and knowledge or experience. The active generation of these two types of relations implies a *motivation* or willingness to invest effort in reading, and an ability to attribute success and failure in generating rela-

tions to one's effort. *Attention*, the third factor in the model, directs the generative processes to relevant text, related stored knowledge, and memory of pertinent experience. The generation of relations among the parts of the text and between the text and one's memory of experience and one's knowledge enhances comprehension.

The model of generative reading comprehension leads to several implications about understanding and supporting the teaching of reading. In the area of motivation the model implies that students should become active, generative learners, who hold themselves accountable and responsible for constructing word and image relations between what they know and what they read.

Teachers can encourage this active student role in comprehension by attributing learning to effort. Only when the learners attribute successful comprehension to their own effort at generating relations among the text and knowledge or experience will the instructor's actions enhance learning. Success, reward, praise, reinforcement, and feedback do not necessarily yield generative learning. Success and teacher approval should be attributed by the learners to their efforts, not to the activities of other people, nor even to the students' own ability. When students attribute learning to other people or to factors external to themselves the effort they invest in learning, their motivation, tends to decline.

These ideas about motivation derive from recently developed attributional models of academic achievement, as discussed by Weiner (1979). The ideas are not original nor unique to generative learning. They imply that the learner's attributional processes must sometimes be modified before reading comprehension can be enhanced. The meaning the learners generate about the causes of learning influences their motivation and their willingness to become active in generative learning.

Attention, one of the three cognitive processes in the model, consists of two components, a short-term, orienting response, and a long term or sustained voluntary response. These two types of attention, along with other types, have been studied extensively in neuropsychology (Wittrock 1980) and in special education. Teachers influence them by the questions they ask, the texts they use, and the directions they provide students regarding the relations they are to construct between their experience and the texts they read.

Generation, the central process of my model of reading comprehension, is not the same as semantic processing, schema building, or discovery learning. Generation is the process of constructing meaning, a representation, a model, or an explanation, for example, of words, sentences, paragraphs, and texts that agrees with our knowledge, logic, and experience, and that makes sense to us. There are two major parts to the generative processing of text and experience. One of them is the process of generating relations among the parts of the text, beginning with the development of meaning by relating sounds to letters (decoding), by relating letters to words (vocabulary), words to sentences, sentences to paragraphs and paragraphs to texts (comprehension). All of these types of constructed meaning, decoding, vocabulary, and comprehension, involve generation.

A second type of generation involves building relations between the text and knowledge and experience. Teachers can let students discover these relations on

their own, or teachers can state these relations for the learners, using similies, analogies, metaphors, examples and explanations to relate knowledge and experience to the text. In either event, students must still generate these relations for themselves to understand the text. For example, if a teacher gives the students an answer to an unsolved mathematics or English grammar problem they do not then necessarily understand the problem or the answer, or see its relevance to their lives. They must still relate the problem and its answer to their knowledge and experiences, from which they construct, if they can, an explanation that makes sense to them. That process of actively relating knowledge and experience to a problem, or a text, is essential to comprehension. Although it disagrees with conventional wisdom, answers and rules given to learners must still be generated by them to understand them. Not discovered, but generated.

From the perspective of my model, the teaching of reading and the teaching of writing share subtle and important generative processes. For writing is more than the construction of text for meaning; and reading is more than the construction of meaning for text. Writing is also a process of constructing meaning, which gets revised and made more precise as one edits, revises, and generates. Reading involves reconstructing the text in familiar terms, examples, and experiences that allow us to relate our knowledge and memory to the message and to the perspective of the author. In each case the generative thought processes used to relate text and knowledge are related to one another.

Research on Generative Reading Comprehension

Over the last decade my graduate students and I have completed a series of empirical studies designed to test implications for teaching the model of generative reading comprehension. In separate studies (all experiments involving individual random assignment of the learners to the treatments), we have asked elementary school children, junior high school students, and college students, as they read a text, to generate paragraph headings, summaries, interpretations, images, and pictures that relate the parts of the text to one another and to their knowledge and experience. We have also tried giving children familiar words to induce generation of sentence meanings, and familiar stories to induce generation of meaning for unfamiliar and undefined vocabulary words. The results of these studies are consistent and easy to describe briefly. They are summarized next. For more detailed discussions of them please see the original articles, a summary chapter (Wittrock 1981), or a summary article written for teachers (Wittrock, in press).

In one experiment (Doctorow, Wittrock, and Marks 1978) with 488 public school sixth grade students individually randomly assigned to eight treatments, we asked the students in one group to generate a summary sentence for each paragraph they read in stories taken from a commonly used, commercially published reading textbook appropriate in difficulty for their reading ability. Another group was also given paragraph headings to use in the summary sentences they were asked to construct. With time to read and to learn held constant across all treatments, the students who generated the paragraph summaries sizably and statistically significantly increased their retention and comprehension of the text, from a mean of

thirty-five for the control group to a mean of fifty-one for an experimental group. The group given the paragraph headings and asked to generate summaries of the paragraphs doubled their retention and comprehension, from an average of thirty-five for the control group to an average of sixty-seven for the experimental group. The control group read the same stories, but they were not asked to generate summaries. The active generation of relations among the sentences in a paragraph encouraged comprehension and retention.

In a study with fifty-eight fourth and fifth grade public school students (Linden and Wittrock 1981) we compared conventional reading instruction, where the children's regular reading teacher taught reading in her usual fashion, with two experimental conditions in which the children were taught to generate and to describe aloud 1) interpretations of the paragraphs in their readings and 2) images relating the sentences of the stories to one another. These children were also taught to generate relations between the stories they read and their own experience. On a test of comprehension of the stories they read, the two experimental classes scored means of thirty-one and twenty-nine, while the control class taught by the children's regular teacher averaged twenty-two. A second control class, taught by the teacher of the experimental classes, but without using the generative exercises, averaged eighteen. These mean differences are also statistically significant, and indicate an increase in comprehension of about fifty percent due to generative activities, again with time to learn held constant. In this study the teaching occurred in groups in realistic classroom settings using conventional reading materials. The teacher variable was also controlled by using the children's regular teacher in one control group, and the teacher of the experimental or generative groups in a second control group. The generation of relations between the text and experiences, and among the parts of the text, enhances comprehension in realistic classroom teaching situations.

I want to mention several other studies very briefly to provide a richer context for the teaching implications that seem warranted from our data. In one study (Wittrock, Marks, and Doctorow 1975) we gave 468 fifth and sixth grade students familiar stories in which we embedded unfamiliar and undefined vocabulary words. Compared with the control groups given unfamiliar story contents all the generative groups increased, from fifty percent to 100 percent, the number of new vocabulary words they could correctly define on a vocabulary test. The study implies that students use familiar contexts to generate word meanings. In a related study (Marks, Doctorow, and Wittrock 1974) with 230 sixth grade students we substituted one familiar vocabulary word per sentence (for example *boy* for *lad*) for one unfamiliar word per sentence in stories from commercially published reading series. Comprehension of the stories increased at least fifty percent, and sometimes 100 percent, with time to learn held constant across the treatment groups. The generation of sentence meaning seems to depend heavily on understanding all of the parts of the sentences, as the model of generative learning implies.

With eighty-seven fifth grade students, we examined whether generating pictures for vocabulary words would enhance memory of definitions, compared with usual teaching procedures that emphasize memorizing definitions (Bull and Wittrock, 1973). The drawing of pictures statistically, but not sizably, enhanced the

memory of the definitions. With ninety college students (Wittrock and Carter 1975) we found that generating a hierarchical organization among conceptually related words, and even among unrelated words, doubled the learners' memories of them.

In recently completed but not yet published studies with large numbers of elementary and junior high school children, we have found that the generation of relations among the parts of the text, by constructing pictures, or summaries, or by the generation of relations between the text and experience, or by constructing applications and examples from one's experience, increases comprehension or retention by at least twenty-five percent, usually by about fifty percent, and sometimes by 100 percent. In these recent studies we find that the type of generation is not as important as is the act of generation itself. In any of its forms teaching that requires student generation of relations among the concepts in the text, or between the text and knowledge and experience, regularly contributes to comprehension or memory of the text. In all but one of our studies this finding has occurred.

Implications for the Teaching of Reading Comprehension

The studies we have discussed imply that reading comprehension and retention can, sometimes at least, be enhanced by encouraging readers to construct summaries, interpretations, main ideas, and images or pictures as they read. When readers construct relations between their knowledge or experience and the text, their comprehension and retention also tend to increase. To attain these results requires learners who accept some responsibility for constructing both types of relations, and teaching procedures which focus attention upon the relevant types of relations to be constructed for a given text.

Beyond motivation and attention, the students need to learn how to construct relations between text and experience. They also need to learn strategies or sequences of generative activities to perform for different types of text. In a narrative, for example, the organization, plot, and sequence require that the learner construct relations differently from those required in expository text. A linear sequence of events is often more appropriate for a narrative, while a hierarchical network of associations is often more appropriate for an exposition. Strategies for the development of relations between these two different types of text and one's knowledge and experience differ also. We are currently studying the teaching strategies of generative learning. We are also teaching students to plan, monitor, and evaluate the relations they construct. We do not yet have data from those studies in progress.

Generative teaching also involves developing a sequence of activities over months and years that increasingly engages learners in constructing relations. When learners cannot attend to the text, are not motivated to relate text and experience, or do not attribute comprehension to their own effort, then these motivational and attentional problems must be addressed before generative learning can be effective.

When the students possess these motivational and attentional skills, but cannot yet generate correct relations between text and experience, then it seems appropriate to give the structure and relations to them. The students can be asked to

work within the structure and to construct additional relations within this context.

In brief, initial teaching in a new area, for young children and for adults, should often be well structured, with a practical amount of generative learning included.

As students become more familiar with the new material and concepts they should increasingly be held responsible for generating the types of relations we have discussed, including analogies, metaphors, images, summaries, main ideas and inferences, depending upon the type of text they are reading and their purposes for reading it. Our data and my model of generative reading comprehension indicate that these activities will, at least sometimes, improve their ability to read with comprehension.

Summary

The generative activities we use to teach reading comprehension in our research studies closely resemble some of the processes used by writers to compose text. From our research with children and adults, I believe that learning to read with comprehension involves acquiring and using some of the same generative skills needed to learn to write.

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Carl Bereiter

Reading for Style

Style is one facet of writing ability that seems especially dependent on reading for its development. How else but through exposure can we acquire an ear for style and a sense of how written language may be varied to create effects? Even style manuals, such as Strunk and White's, presuppose that we are sensitive to the differences between examples and that we will be reminded of a whole class of expressions when shown only one or two instances.

But exposure is not enough. One must not only read; one must, as Frank Smith puts it, "read like a writer" (1982, p. 179). The study to be reported here is one of a series of studies being undertaken by the Toronto Writing Research group, the aim of which is to understand the psychological processes that constitute "reading as a writer" and to develop ways of promoting the development of such processes.

In the present study we used the procedure of having students think aloud while reading (Bird 1980; Olson, Mack, and Duffy 1981) as a way of gaining access, however imperfectly, to what they were paying attention to as they read. Three modes of attending were considered. One, of course, is attending to content. Models of reading comprehension, such as that of Kintsch and van Dijk (1978), describe the process of extracting propositional content from texts. We assume that if readers are concerned exclusively with content they will only notice language when it gets in the way of comprehension. Another mode of attending is that of the stylist, who looks exclusively at the stylistic options chosen by the writer. One would not expect to observe much of this in normal reading, but in one of our experimental conditions students read different translations of the same passage, so that stylistic differences were made salient. The final mode is that which Louise Rosenblatt (1978,1980) has called aesthetic, in which the reader responds holistically to both

style and content. We were interested in finding out whether students who responded in this way would be more likely than others to detect stylistic features and be able to incorporate them into their writing.

Two other matters of concern in this study were the effects of repeated readings of the same passage and the effects of task instructions. I. A. Richards (1929) observed that his undergraduate English students needed repeated readings of a poem before they could begin to attend to its literary character. Assuming that on first reading students would normally attend mostly to content, we were interested to see whether on subsequent readings their attention would shift toward the language or whether it would drift to more remote associations to the content. By varying task instructions from one that imposed no constraints on attention to another that called explicitly for analysis of style, we hoped to learn about students' ability to exert deliberate control over their attention to style as opposed to content.

Procedure

The students who took part in this study were the twenty members of a twelfth-grade English class that had been studying Dante's *Inferno* in a modern verse translation. In order to minimize the saliency of content and to maximize that of style, the experiment used passages from the *Inferno* that the students had already studied, but in different translations.

All students were given fifteen minutes of training in thinking aloud while reading, using procedures developed by Bird (1980), which involve explanation, modeling, and supervised practice. Students are taught to read aloud and to express any thoughts as they occur—a procedure that has been found to have important advantages over retrospective reporting (Ericsson and Simon 1980).

Two experimental tasks were used. In the first, students read a single passage three times. Half of the students were instructed, "Tell me everything you are thinking about," while the other half were instructed, "Tell me everything you notice about the way this is written." In the second task students compared two versions of another passage—one in contemporary style, and one done in a more archaic and ornate style. They then chose the style they prefered and were given a different passage, which they were to convert into that style. The passages used in this portion of the experiment were drawn from available modern prose translations, but were modified to intensify contrast on the five stylistic features listed in Table 1.

These procedures represent an effort to combine a modern interest in cognitive processes with the classical interest in translation and imitation. In classical teaching of rhetoric, translation was often used as a way of developing sensitivity to style and control over it (Corbett 1971; Dixon 1971). For students proficient in only one language, translation between styles is a substitute that would, we hoped, capture some of the same effect on stylistic awareness.

What Readers Notice

Comments made by students during repeated readings of the same passage were classified according to whether they showed attention to content or to style.

Perhaps the most notable finding was that being instructed to notice how the passage was written had no significant effect on students' attention to style. The mean percentage of style-related comments was ten in the instructed group and seven in the group given no special orienting instructions.

There was only a slight and statistically nonsignificant tendency to pay more attention to language on successive readings. The mean percentage of style-related comments on first through third readings was six, nine, and eleven. Four students in the instructed group did, however, show a marked shift toward greater attention to style. Their mean percentage of style-related comments went from zero to twenty-three to fifty over the three readings.

These four students, along with two others from the uninstructed group, formed a distinctive group of students. While, along with the other students, they showed a primary interest in content, by analyzing and raising questions about meaning, these students also responded to the text in a variety of other ways. They voiced opinions about it and related it to other texts and to their own experiences. They also attended to language and responded affectively more than the others.

These students, thus, were reading aesthetically, responding in a holistic way both to content and to the way it was expressed. The following protocol excerpt illustrates this kind of response: "'Murky air' makes it seem like a war, as though death is all over the place. I like the way this guy writes; it's very poetic. 'Doves summoned my desires' is very nice to read."

The remaining fourteen students were information-getting readers. They often spontaneously paraphrased or summarized the text, a practice that Bird (1980) and Scardamalia and Bereiter (in press) found to occur in the reading protocols of skillful readers encountering difficult material. By thus putting the text into their own words, however, they moved farther away from its language. Some students in this group commented that it was boring to read the passage a third time. To these readers, it seems, once the meaning has been extracted there is nothing more to be gained from reading a text.

Among the information-getting readers was a subgroup of five whom we shall refer to as "comprehension-difficulty" readers. Their protocols were marked by comments of the "I don't get it" variety, and they tended to be self-conscious about thinking aloud while reading. Their concern also was clearly with meaning, but they did not show the effective problem-solving and synthesizing strategies that the more successful information-getters displayed.

Comparing Translations

The task of comparing translations of the same passage produced a significant across-the-board increase in attention to language. The mean percentage of style-related comments rose from nine to forty-five. On this task the aesthetic readers began to read more like style analysts. They paid more attention to style than to content and they no longer responded affectively. Oddly enough, the comprehension-difficulty readers started to act more like aesthetic readers, showing increased affective response along with increased attention to style. This may have occurred because one of the translations, in a modern style, was easier to com-

prehend than the translation they had been reading in the previous task. The successful information-getting readers showed least change: an increase in style-related comments, but still a preponderance of comments related to meaning.

Although the two translations—one in a modern, one in an archaic mode—differed across a spectrum of stylistic features, the students' comments focused overwhelmingly on one feature, diction—the choice and arrangement of words. They used adjectives like "older," "plainer," "descriptive," and "poetic" to express differences they saw between the two translations. Only two students commented on the differing lengths of sentences, and none of them mentioned differences in grammatical structure, use of relative clauses, and punctuation. Although the concepts of metaphor and personification had been dealt with in their previous course work, only four students noted these features, which also differed between translations.

Style Imitation

After indicating which style he or she preferred, each student was then given a new passage in the contrasting style and was asked to rewrite it in the preferred style. To evaluate students' success with this task, their compositions were given to three raters who were not told which style the student was trying to produce. Raters were also provided with the two actual translations of the passage. For each of five different stylistic features, the raters assigned scores to each student composition on a five-point scale ranging from very close resemblance to the archaic translation to very close resemblance to the modern translation. Success was indicated, then, by scores tending toward whichever end of the scale represented the chosen style.

In Table 1, ratings on the five stylistic features are presented in such a way that a positive score indicates resemblance to the intended model (with a maximum possible score of +2). Correspondingly, a negative score indicates a closer resemblance to the style of the original text than to the style the student was trying to imitate. On only two style features were the mean scores significantly positive—vocabulary and verb forms. Verb forms are, of course, the most obvious markers of archaic style ("sayeth," etc.). Vocabulary differences consisted mainly of more high-flown and poetic terms in the archaic version (for instance, "noise" versus "tumult").

Table 1

Mean Ratings of Success in Imitating Stylistic Features: Information-Getting Readers

Stylistic Feature	Aesthetic Readers (n=6)	Comprehension Difficulty (n=5)	Others (n=9)	Total Group (N=20)
Verb Forms	+1.5	+0.5	+0.8	+0.9
Vocabulary	+1.5	+0.6	+0.8	+0.9
Phrasing	−0.5	−0.9	+0.5	−0.1
Relative Clauses	−1.2	−1.4	−0.6	−1.0
Sentence Length	−0.6	−1.6	−0.6	−0.9

Five students, by adding or deleting descriptive phrases, were able to achieve intended effects on the phrasing dimension. None of the students, however, successfully modified basic sentence structures. This often produced what one rater called a "jarring" effect, when archaic words were planted into the shorter sentences and simple syntax of the modern version or when modern vocabulary was planted into archaic syntax, as in "I heard moans all around me, yet stopping I was confused for I saw not the souls who made them."

The three groups of readers previously identified did not differ significantly in the success of their stylistic imitations. However, as Table 1 indicates, the aesthetic readers tended to be more successful in using appropriate vocabulary and verb forms, while the comprehension-difficulty students were least successful.

What Is Reading As a Writer?

In another recent study (Bereiter and Scardamalia 1983), students ranging from grade five to graduate school were shown one example of a novel type of fiction (roughly based on the French genre, *chosisme*) and, without any other instruction, were asked to write a piece of fiction of their own in the same genre. As in the present study, students at all levels were most successful at noticing and imitating concrete, word-level features, and least successful with abstract, structural characteristics. Yet at all levels some few students were able to capture the essence of the genre through exposure to a single example. One of the most successful imitations—a parody, in fact—was produced by a fifth-grader.

There was only one notably successful style imitator among the twenty students in the present study. When rewriting the modern translation into the archaic style, this student transformed a sentence like "I heard wailings all around me" into highly colorful language: "The echoes of lamentations and the distorted screeches of torment surrounded my body with a canopy of death." Although he went overboard with his embellishments, the flamboyant style is in keeping with the model he was imitating. Note also that he did more than add colorful words and phrases. He altered the whole sentence frame, shifting focus from the narrator to the wailings.

This student was one of the six identified as aesthetic readers, and of all the students he made the most comments on style while thinking aloud during reading. Aesthetic reading—by which we mean responding holistically to both content and style—is evidently not by itself sufficient to constitute "reading like a writer." But it may be the necessary foundation on which "reading like a writer" is built.

It will take considerably more research before we have clear ideas of how to enable students to read in such a way that it helps them develop as writers. The traditional way has been through close analysis of texts. The present study does not suggest that such analysis is bad, but that it needs to be approached through a natural sequence if it is to be successful:

1. Comprehension must come first. Until students have understood a text to their satisfaction, they have little tendency to respond to style, either affectively or analytically. This could mean either that texts chosen as literary models should be easy to comprehend or that preliminary reading and

study should be devoted to comprehension before any attempt is made to shift attention to how the text is written. In the present study *all* the students showed significant difficulties in understanding the passages they were given, even through they had previously studied them in class.

2. Students should be encouraged to respond freely to the text. Many of the responses that aesthetic readers revealed while thinking aloud were "irrelevant" as far as the intent of the text was concerned. Occurrences of the word "love" would set off romantic associations having nothing whatever to do with the *Inferno*. But aesthetic response involves the whole person responding to the whole text, and so it would seem risky to impose criteria of relevance or appropriateness, especially with young readers who have not yet developed a response to literature that is distinct from their response to real events.
3. Analysis should seek to explain response. This is no more than a hunch from the present study. It seemed that when aesthetic readers switched over to analysis of style, they had a sense of what they were looking for, because they already had an aesthetic response that told them what the text was doing. Style analysis then becomes a search for what it is about the text that affected you in a certain way. Style analysis not based on prior aesthetic response would seem to be sterile—again, especially for young readers who probably lack the more detached kinds of literary appreciation that sophisticated readers are capable of.
4. Task design can increase attention to how things are written. It is a commonplace rule of concept teaching that if you want students to attend to a certain dimension, you should present examples which vary on that dimension while other things remain the same. This rule can be applied to designing reading activities so as to highlight characteristics of the writing. A way to highlight structural properties of the text is to present the sentences in scrambled order and have students try to reconstruct the original order (Schiff 1978). In such a task, language and detailed content remain fixed while structure is free to vary. A way to highlight style is to have students compare translations, where content and structure remain the same but language varies (Parr 1977). Giving students the task of transforming one translation into the style of another, as was done in the present study, creates an even more attention-riveting situation of reading for style.

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Writing and Reading in the Elementary Grades: Developmental Trends Among Low SES Children

Many large-scale national and international surveys have found that children of low socio-economic status (SES) achieve appreciably below that of middle SES children on tests of reading and related skills (Coleman 1966; NAEP 1981; Thorndike 1973). It has also been observed that reading achievement among low SES children starts to decline at about grade four or five (Berry 1977; Chall 1969, 1979, 1983).

This paper presents findings from a recent study on writing and reading achievement of low SES children (Chall, Snow, et al. 1982).[1] The study consisted of thirty low SES students in grades two, four, and six (who were retested a year later in grades three, five, and seven). SES was based upon family income level and eligibility for a federal lunch program. Students were categorized as "above average" or "below average" readers based on initial recommendations of classroom teachers and test scores taken from the pupils' files. They were further screened on individual tests of oral reading, word recognition, and word analysis administered by the research team. In order to avoid either highly precocious readers or those with learning disabilities, above average readers were drawn from the fifth and sixth stanines; and below average readers were drawn from the third and fourth stanines.

Specifically, among the questions asked were: what is the course of development of reading and writing among low SES children? Are the trends similar for various writing and reading measures? For the above and below average readers?

1. The reading results presented here are based on cross-sectional comparisons of the pretests with the posttests, as well as the individual gains of the same students from grades two to three, four to five, and six to seven. The writing results presented here are restricted to the narrative sample taken at the end of the second year of the study. The final report to NIE (Chall, Snow et al. 1982) presents more completely detailed data on the comparisons for both reading and writing.

Do writing and reading scores decelerate? If so, when? And is deceleration similar for above and below average readers?

Selecting the Reading and Writing Measures

The tasks of assessing reading and writing were quite different. Because of the long years of research and tradition in reading assessment, the selecting of tests was considerably easier for reading than for writing. For reading, an individually administered test was selected that gave separate scores on six reading and language-related components—word recognition, phonics, oral reading, word meaning (administered orally, without print), silent reading comprehension, and spelling (Roswell and Chall, in press).

Writing assessment, on the other hand, is still in a period of early development. Few standardized writing measures have been developed (Cooper and Odell 1977; Fagan, Cooper, and Jensen 1975; Hammill and Larsen 1978). The writing assessment procedures used here were based on a literature review, on trial testings of many of the measures on students in the Harvard Reading Laboratory (1979-1980), and on discussions with active workers in the field.[2]

Our writing assessment consisted of ten minutes of writing on a narrative and ten minutes on an expository stimulus taken from the National Assessment of Educational Progress (NAEP 1972). We present here the results from the narrative stimulus only, which consisted of a picture of an old woman looking at a package of tomatoes that she is holding. The instructions were the same as those used by the NAEP:

> Here is a picture of a woman with some tomatoes. Look at the picture for a while and think about what is going on. When you have decided, write a story that tells what is happening in the picture and what is likely to happen next.

The writing samples were evaluated on twelve measures[3]—six judgmental and six objective counts of traits. The judgments were made either of the total sample (an overall holistic rating of 1-4 and an overall holistic ranking of 1-30) or of such characteristics as organization (1-3), content (1-4), form (1-4), and handwriting (1-3). For all measures, "1" always indicated the lowest rating or ranking. The six "objective" counts were: number of words written in the ten minutes (production); average t-unit length (Hunt 1966); average sentence (utterance) length; words beyond the Spache vocabulary list of 1,000 common words (Spache 1974); unfamiliar Dale vocabulary words beyond the 3,000 familiar to fourth graders (Dale and Chall, forthcoming); and percent of misspelled words.

The twelve measures could be divided, further, into four categories useful for analysis: 1) overall measures (holistic score, holistic rank, and production); 2) syntactic-organizational measures (organization rating, t-unit length, and sentence (utterance) length; 3) content measures (content rating and unfamiliar Spache and

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2. Special thanks are extended to Joe Check and Peter Golden of the Boston Writing Project, an affiliate of the National Writing Project.

3. Special thanks are extended to Luke Baldwin who assisted in the administration and the evaluation of the writing tests.

Dale vocabulary); and 4) precision measures (form rating, handwriting rating, and percentage of misspellings).

Writing Results

Generally, fifth graders had much higher mean writing scores than did third graders. Seventh graders made little, if any, gains, relative to fifth graders. Compared to the grade three to five "gains," the grade five to seven "gains" seemed to decelerate.

This trend is found for total grades on all the overall measures (holistic score, holistic rank, and production); for all the syntactic-organizational measures (organization rating, t-unit length, and sentence length); some content measures (content rating and number of Spache vocabulary); and one precision measure (form rating). The trends of the precision measures varied the most. Handwriting, for example, did not seem to change with successive grades, and misspellings seemed to increase with successive grades.

Above average readers were most consistent on all four types of writing measures (overall, syntactic-organizational, content, and precision). They showed a large increase between grades three to five and a lesser increase, a plateau, or a slight decrease between grades five to seven.

The below average readers generally resembled the above average readers' trends on the overall, content, and syntactic-organizational measures. However, on precision measures they showed little growth, or a relative decline.

At grade three, the above and below average readers' writing scores were quite similar. At grade five, differences favored the above average readers on most writing measures—and again at grade seven. Thus, while above and below average readers exhibited the same kinds of developmental writing trends, above average readers were generally rated "better."

Two of the most interesting observations about the writing of the above and below average readers are the similarities of their content ratings and the differences in their form ratings. The content rating (1-4) was based on cohesion (Halliday and Hasan 1976), interest, humor, complexity of situational development, and overall coherence. Overall, content ratings were progressively higher for both the above and below average readers in successive grades, and the increases were *equally* strong at grade five (compared to grade three) as at grade seven (compared to grade five).

In general, third graders wrote mostly "lists," with an average content rating of 2.3. Fifth graders' ratings reflected some story development, but their narratives were still mostly list-like, with an average content rating of 2.8. Seventh graders showed evidence of use of detail, elaboration, and connection between ideas, with an average content rating of 3.3. Above and below average readers' content ratings resemble the total grade trend described above. It is most interesting that the above and below average readers' content ratings were the same at grade seven although there were differences between the two groups in grades three and five.

In contrast to the content trends are the trends found for form. The form rating (1-4) was based on mechanics (spelling, punctuation, and capitalization), sentence structure, and grammar. Overall, like content ratings, form ratings were generally

progressively higher for successive grades. However, form ratings did not vary as greatly between grades as did content ratings. For form, there was only a .4 difference between grades three and seven. The mean form rating for third graders was 1.9; for fifth graders, 2.0; and for seventh graders, 2.3. Overall, all the students' writing was rated as having some grammatical and mechanical problems resulting mostly from "run-on sentences."

The form ratings for above average readers resemble that of the total group; they received progressively higher form ratings over the grades (from 2.0 to 2.4), but the increase was slight.

The form ratings for below average readers also remained low (1.6-2.1), and consistently lower than those of the above average readers. The below average readers were generally rated as suffering particularly from severe sentence-structural problems. They exhibited grammatical and mechanical problems such as tense, subject-verb agreement, omitted subjects and verbs, and errors in punctuation and capitalization.

Above and below average readers also differed on quality of handwriting (1 = illegible handwriting, 2 = legible handwriting, and 3 = neat, stylized handwriting). The above average readers had higher ratings over successive grades (1.8 to 2.0 to 2.5) while below average readers received the same average rating in each grade (2.0).

The other precision measure that differentiated the above and below average readers was spelling. The above average readers misspelled about the same percentage of words at grades three, five, and seven (six-eight percent). The percentage of misspellings for the below average readers, however, increased from six percent in grade three to eleven percent in grades five and seven.

Summary of Trends in Writing

Overall, the cross-sectional scores on the narrative writing samples tended to show a decelerative trend from grades five to seven on all measures except for handwriting and spelling.

The above average readers were generally better in writing than the below average readers on most writing measures after grade three; at grade three, the above and below differed little. Overall, however, the above and below average readers had similar patterns of writing development (except for precision factors)—greater relative growth between grades three and five than between grades five and seven.

Neither the above nor the below average readers used many unfamiliar vocabulary words. Counts of unfamiliar vocabulary in their narratives were quite low for both the above and below average readers at all grades. Regardless of the length of the essay, our students generally used three-six words not on the Spache list of 1,000 common words. Above average readers generally used one-two more words not on the Spache list than did below average readers. Words not on the Dale list of 3,000 words familiar to fourth graders were used only on the average of less than one word by any one child.

In addition, neither the above nor the below average readers received high ratings on precision measures, and especially on form. Thus, while content im-

proved steadily with successive grades for both the above and below average pupils, form remained low for both—low for the above average and even lower for the below average.

This tendency may be seen in the examples presented below. First, we present the rating scales for both content and form. Then excerpts appear that approximate the average content and form ratings at each of the grades: three, five, and seven. The content improves over successive grades, with little difference, however, in the quality of the form used from grade to grade.

Average Content and Form Examples[4]

Content Rating:
- 4 = an interesting, varied presentation, developed logically and with such strategies as cause/effect, illustration, example, and detail.
- 3 = an interesting, slightly varied presentation developed primarily through enumeration of fact with some explicit connection made between facts.
- 2 = a "flat" list of facts or details.
- 1 = a sentence or two that are generally unconnected; no "story" is told.

Form Rating:
- 4 = no errors, or possibly one or two isolated errors.
- 3 = a few isolated errors in mechanics and sentence structure; grammar is largely acceptable.
- 2 = sentence structure problems (i.e., run-ons) coupled with other grammatical and mechanical problems.
- 1 = severe sentence structure problems (fragmentation) as well as severe grammatical and mechanical problems.

Grade 3 Student A (Below Average Reader)

Average content rating = 2.3
Student A's rating = 2.3
There was a woman who had tomatoes. She was holding them in her hands. She was looking at the other tomatoes, and she was going to buy them to have in her salad at home with her children for supper and hamburgers and tomatoes.

Average form rating = 1.9
Student A's rating = 2.0
There was a women how had tomatoes. she was holding them in her hands she was looking at the other tomatoes and she was going to buy them to have them in her salad at home with her children for supper and hamburgers with tomatoes.

Grade 5 Student B (Above Average Reader)

Average content rating = 2.8
Student B's rating = 2.7
This is an old lady looking for some big, red, juicy tomatoes. She is going to buy some tomatoes. When she gets home, she might make salad to eat for lunch. She also might be picking up some tomatoes for her son's wife or a friend. After maybe a week, she will go back and get some more juicy tomatoes to eat or maybe lettuce this time. She might not even get vegetables anymore. She might get some nice lean meat and have a cookout and have meat, Coke, hamburgers, hot dogs, and fruit punch.

4. In the following examples, grammar and mechanics have been corrected in the content examples to draw the reader's attention to the ideas being presented. No corrections have been made in presenting the same examples for form.

Average form rating = 2.0
Student B's rating = 2.0
This is an old lady looking for some big red juicy tomatoe's. She is going to bye some tomatoes. When she get's home she might make salad to eat for lunch, she also might be Picking up some tomatoes for her son's wife or a frend. After maybe a week after she she will go back and get some more juicy tomatoes to eat or maybe lettuce this time. She might not even get vegativbles anymore She might get some nice lene meat. and have a cook out and have meat, coke, hamburgers, hotdogs and fruit punch.

Grade 7 Student C (Below Average Reader)

Average content rating = 3.3
Student C's rating = 3.0
This lady in the picture looks like she is in a shopping store. She looks like she wants tomatoes, and somebody is talking to her. And she stops to look to see who it is.

This lady also looks like she is going to open the package to see if anything is wrong with the tomatoes, but she wants to see if anybody's looking at her.

This may seem very funny, but she also looks like she is going to steal those tomatoes, but she tries the playoff and looks back to see if anybody is going to see her take them.

She also looks like she picked them up to get them, but it was the wrong thing. And at that time somebody said, "Hi," and she stopped to say, "Hi" back. And she was going to put the tomatoes back.

Average form rating = 2.3
Student C's rating = 2.0
This lady in the picture looks like she in a shopping store. She looks like she wants tomatoes, and somebody talking to her and she stops to look how it is.

This lady also looks like she going to open the package to see if anything a wrong with the tomatoes, but she wants to see if anybodys looking at her.

This may seem very funny, but she also looks like she going to steal those tomatoes, but she try the play off and look back to see if anybody going to see her take them.

She also looks like she picked them up to get them but it was the wrong thing, and at that time somebody said Hi and she stoped to say hi back, And she was going to put the tomatoes back.

The tendency of the students in our sample to have "better ideas" than ways of expressing them successfully in their writing is especially characteristic of the below average readers' writing (compare Shaughnessy 1977). Although the below average readers in our sample showed the same general decelerative trends as did the total group and above average readers on most of the writing measures, they showed a more marked deceleration in form: in syntax, grammar, and mechanics. They seem to have more problems in juggling the multiple constraints of the writing task (Flower and Hayes 1980).

Reading Measures

The reading test results were viewed from several standpoints: trends from grades

two to seven (of overall and different subskills); comparisons of scores for students above and below average in reading; and the relationships of reading and writing.

Two cross-sectional analyses were made in grades two, four and six (pretests) and in grades three, five, and seven (posttests). Longitudinal analyses were made on individual student gains from the pre to the posttests: from grades two to three, four to five, and six to seven.

The reading tests were scored several ways, permitting both total scores and grade level scores which made possible comparisons of test results with expected reading levels for a grade.

Reading Test Results

In spite of the small numbers tested at each grade, consistent trends were found for the reading measures that were generally similar to those found for writing. The scores on the pretests were at expected reading levels for grade two with somewhat lower than expected scores at grade four, and stronger deceleration at grade six. A similar trend was found on the posttests—good scores at grades three and five, with deceleration at grade seven. The average gains on the posttests over the pretests were similar, with over a year gained from grades two to three and four to five, and less than a year's gain from six to seven.

The various reading components seemed to develop somewhat differently. The strongest and most consistent developments were found for oral and silent reading. Spelling and word recognition had an early, strong development, but a slower development in the higher grades. Word meaning had a good start in grade two, but was first to go into an early and strong deceleration. In grade four, the children already tested below their expected grade levels in word meaning. In grades six and seven they tested more than two years below grade level.

Thus, compared to a general population of children in grades two to seven, these low SES children as a group begin in grade two on grade level or above on the various reading components. Trends show that they decelerate first, and continue to decelerate, in word meanings, beginning at about grade four. The deceleration was somewhat less strong and came somewhat later for word recognition and spelling. Tests of oral and silent reading, which used context, decelerated least and latest. Indeed, on oral reading, they were still somewhat above grade level in grades six and seven.

The above average readers generally tested above the below average, yet their developmental trends tended to be similar. But in comparison to the above average, below average students generally began to decelerate earlier; and their deceleration was stronger. The above average decelerated later and their deceleration was less marked. Indeed, the above average groups tended not to decelerate on some tests even by grades six and seven.

These above/below average group differences suggest that the deceleration tendency around grades four and five, reported in the literature for low SES children, may characterize primarily the below average achievers. The above average low SES students in our population have patterns of development similar to the general population, showing little or no deceleration even by grade seven.

Our analysis also revealed the special problems of the below average, low SES

readers. Although those in grades two and three test "on level," those in grade four have begun to lose ground fast and are already below expected reading levels.

Reading, Writing, and Language

Almost all of the above findings for reading parallel those for writing. Although the writing assessments did not give grade level scores, the trends found from the rankings, the ratings, and internal measures made it possible to compare cross-sectional trends and gains in reading and writing.

Generally, reading development in grades two and three was strong, followed by deceleration starting around grades four and five. The deceleration continued through grades six and seven. Writing development followed a similar course of development at grades three, five, and seven.

Differences in the developmental trends of above and below average achievers on reading components were similar to those for the different writing measures. Similarly, the tendency toward earlier and stronger deceleration among the below average readers as compared to the above average was found for writing as well as for reading.

Relationships between reading and writing among these students were studied also by factor analyses, which included, in addition to the various reading and writing measures, various measures of language—tests of word meaning, grammar, and language (metalinguistic) awareness.[5]

The factor analyses revealed that reading and writing tended to be strongly related—loading on the same general factor. Reading related positively to language, but only on the word meaning measures, and in the later grades: grades six and seven. The writing scores were also related to the language scores, particularly to the grammar and language awareness measures.

These interrelations have many implications for our particular population of students and for children who share some of their characteristics. It would seem that the relationship of various literacy and linguistic skills depends on the nature of the skills, how they are tested, and when they are tested. Let us take as an example the relationship between reading and language. With the increasing interest in psycholinguistic theories of reading, there has been a growing assumption that high achievement in language is necessary for development in reading. While it is generally assumed that language is positively related to reading, indeed, that reading develops from it, our data indicate that reading, for our population, from grade two until about grade six, relates little to the language tests administered—grammar, language awareness, and word meanings. It is only at grade seven that word meaning correlates positively with reading, and specifically with silent reading comprehension.

Why is this so? One hypothesis is that the materials read by students in grades two to six do not yet contain many words beyond their spoken language and listening comprehension. It is in the higher elementary grades (grade seven and

5. Carol Chomsky developed a variety of language tests. Rosalind Davidson administered and analyzed them.

beyond, or as low as grade four) that textbooks and independent reading go beyond what most of the children know—linguistically and conceptually.

Thus reading and language measures may not interact highly in grades two to six of our population. But it is expected that, as the reading matter becomes more difficult (in textbooks and on reading tests), language skills will relate more to reading achievement.

The stronger relationship between writing and language suggests that writing, being more expressive and precise in its use of language, requires a greater facility with language than does reading. We saw this particularly in the measures of form in constructing sentences and paragraphs and using unfamiliar words.

These findings are of particular interest since it has long been assumed by many that the poor reading and writing of low SES children stem primarily from their language. Our findings tend to confirm this for writing, but not for reading, at least not till grade seven for word meaning. Grammar and language awareness do not, however, seem to affect reading from grades two to seven. Vocabulary meanings do affect reading, but at about grade seven for our population.

It is important to note that although word meaning scores of the sample population are consistently below grade level in grades four/five and six/seven, their word meanings were on grade level at grade two. Thus, although all aspects of language are important ultimately for literacy, their importance seems to vary at different times and for different aspects of literacy.

If language affects reading scores later for these low SES children, what affects the scores earlier? The correlations and factor analyses of the various reading tests indicated that in the early grades, recognition of single words (and also phonics and oral reading) seemed to be important for general reading achievement. In the later elementary grades, the reading factors are related more to language and meaning, as found in the tests of word meaning and silent reading comprehension. Also important in these later grades are precision and decontextualization skills, such as the facility to recognize harder words in isolation, to define difficult words, and to spell.

What Are the Implications?

It would seem from our findings that there is a definite need for more emphasis on the writing of these children. Not only is writing important for itself, but the strong relation of writing to reading and language suggests that the development of writing may also enhance reading and language. These children are especially in need of better form in their writing. They seem to have great difficulty with a sense of sentence, organization, and spelling. The quality of their content, their ideas, seems considerably above their form at each grade.

The greatest needs in reading are for word meanings of more difficult words and for precision in word recognition and word meanings. Although word meaning does not seem to relate to reading comprehension until grades six/seven, it would be well to experiment with various programs—ones that begin earlier, perhaps at or before the grade when word meaning begins to decelerate (grade four). The intercorrelations and factor analyses indicate the importance of learning word meanings

from context (from challenging reading materials) as well as from systematic study of words out of context.

The differences in reading and writing between the above and below average readers present the biggest question. While both groups differ little in grades two and three, the gap between them grows with successive grades. The differences seem to be due to the fact that the above average students seem hardly to decelerate. At grades six and seven, their reading scores tend to remain above expected grade levels. On the other hand, the below average students tend to decelerate earlier and to a greater extent. Thus, by grade six, most below average achievers are substantially below grade level.

It appears, then, that the findings that low SES students drop further and further behind their grade expectations seems particularly characteristic of the below average readers, not the above average readers. This needs further investigation; for, if below average, low SES children experience problems earlier and if they decelerate more extremely, then one may perhaps need to look to solutions in prevention and early diagnosis and treatment—solutions sought for children of all social levels who have reading and learning difficulties.

It would seem worthwhile to continue studies of these children, adding studies of their individual characteristics as well as their school and home conditions. Generally, we were most encouraged by the achievement and progress of these low SES children, particularly in reading. The above average readers did especially well in both writing and reading. It is the below average of these children that present the great challenge. But for them, too, one can be optimistic; for at the end of grades two and three they scored as well as the above average readers, and as well as a normative group of children of varied social levels.

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Barbara Eckhoff

How Reading Affects Children's Writing

During the past few years, there has been increasing interest not only in how children learn to write but also in how reading and writing are related. Evidence shows that success in writing is well predicted by reading scores (Evanechko, Ollila, and Armstrong 1974; Heil 1976; Loban 1970; Maloney 1968) and that increased reading practice improves writing (Devries 1970; Mills 1974). Little is known, however, about how reading and writing are related. Chomsky (1972) suggested that children can learn complex language patterns from reading them in books, and Zeman (1969) found that better readers in second and third grades use more compound and complex sentences in their writing.

Thus, children may learn structures from their reading and use them in their writing. Children may also learn other features of written language from their environment and from their reading. Harste, Burke, and Woodward (1981) found that the "handwriting" of four-year-old children from different countries attending the same university preschool resembled that of their native countries, and Calkins (1980) observed that children learn about punctuation from their reading. In sum, exposure to written language may help children learn about print and language structures, which may in turn influence their writing.

Methods

To explore the possible effects of children's reading on their writing, I analyzed reading texts and writing samples from two second-grade classes. One class was in

I wish to thank Carol Chomsky for her guidance and wise counsel; the students, teachers, and principals of the school systems for their willing cooperation; and Mary Jean Moore for her valuable editorial assistance.

a school where teachers used a series of texts that I will refer to as "Basal A" readers; the other was in a school where teachers used a different series, "Basal B." Series B uses the simplified style found in many basal reading texts, while Series A more closely matches the style and complexity of literary prose (see Figure 1). For both classes, children who were diagnosed as having learning disabilities and those who had not attended the school since the beginning of first grade were excluded from the study. All seventeen children reading the Basal A series were reading the 2.2 reader. Of the twenty children reading the Basal B series, four were reading the 1.2 reader, three the 2.1 reader, seven the 2.2 reader, and six the 3.1 reader.

To systematically sample the basal texts, I classified the stories in each text as expository, narrative, or fairy tale and randomly selected 20 to 25 five-sentence segments, taking care to sample a representative number of each category of writing. For each text, I counted the number of words, t-units, and words per t-unit. To ensure that the samples were representative of the readers, I analyzed a second set of samples from each text and compared the results with the first set. There were no significant statistical differences between the two sets of samples. For further analysis, I used the samples with numerically higher values for Basal B and with lower values for Basal A to preclude any possibility of bias.

To obtain the writing samples, I administered two writing stimuli adapted from the 1969-70 National Assessment of Educational Progress; one was narrative, the other expository. Writing stimuli were administered under similar circumstances in the two classes. In the texts and in the writing samples, I analyzed the style, format, and frequency of occurrence of linguistic structures, using the chi square statistic and student's t to test for significant differences. To control for possible developmental differences between Basal A and Basal B children, some comparisons excluded the writing samples of Basal B children who were reading below grade level.

I hypothesized that although children may read many books in addition to their basal reading texts, the basal readers are likely to have a strong impact on children's writing because children consistently spend more time each day reading these texts than any other books. Since the Basal A and Basal B reading series were very different, it seemed likely that features found primarily in one series would appear predominantly in the writing of children who were reading that series. Figure 1 contains sample passages from the two texts. Among many differences, the language of Basal A is more complex. Basal A has longer sentences and longer t-units, and contains more subordinate clauses than Basal B.

Of course, there was much variation in the writing of the children in both groups. However, comparison of the two groups showed strong differences, indicating that the writing of the children reflected features of the basal series they read.

Results

Linguistic Structures. Perhaps the most important finding was that the children used linguistic structures from the texts. Basal A children tended to use more elaborate

Figure 1
Reading Selections: Level 2.2

BASAL A

Our Capital

Every country has a capital, where its rulers live. In old countries, when there were kings, the capital was wherever the king wanted it to be. But when the United States became an independent country, it was no longer ruled by a king. The American people had to decide which of their cities, like Boston, Philadelphia, or New York, would be their capital. Since they couldn't agree, they built a new city, which they named after our first president. The new city had a special state all to itself, called the District of Columbia, or D.C. for short.

BASAL B

A Great City

When our country was young, the city of Washington, D.C. was built. The city called Washington, D.C. was built in a forest.

It was built near two beautiful rivers.

Wild geese winged their way across the sky, and frogs called from the rivers.

Trees were cut down and the great capitol building was built. Our laws were made in the capitol building.

A house was built. The President of the United States would live in this house.

sentence structures, whereas Basal B children tended to use more simple sentences. Basal A children also wrote more words per t-unit than did Basal B children. The extra words per t-unit reflected the use of more complex verb forms and elaborate structures, such as subordinate clauses, infinitive phrases, and participial phrases—all structures that Basal A children found more often in their texts.

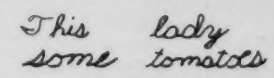
To analyze the verbs in the texts and writing samples, all simple present and past tense verbs, such as "climbs" in the sentence "He climbs on walls" and "gave" in the sentence "She gave them to another man," were counted as simple verbs, whereas verbs with auxiliaries, such as "had brought" and "might run," were counted as complex verbs. Basal A texts used significantly more of the complex verb forms than did Basal B texts.

An analysis of verbs in the children's writing yielded similar results. While the children in the two groups used approximately the same number of verbs overall, the Basal A group used significantly more complex verbs than did the Basal B group. The Basal B children reading below grade level in the 1.2 and 2.1 texts, however, wrote less complex sentences than their classmates. Because they may have been in part responsible for the overall differences, I compared the Basal A children with only those Basal B children reading on grade level or above. The results still held; Basal B children, regardless of reading level, used fewer complex verbs than Basal A children. Some examples of complex verbs from the Basal A children's writing are given in Figure 2.

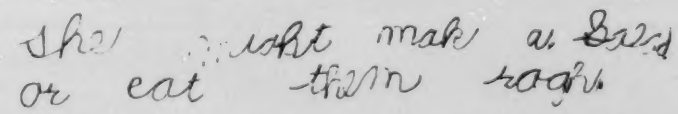
Figure 2

Complex Verbs from Basal A Children's Writing

CHILD 1: LEVEL 2.2

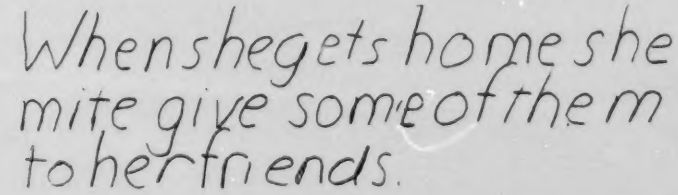


CHILD 2: LEVEL 2.2



she might make a Salad
or eat them raw.

CHILD 3: LEVEL 2.2



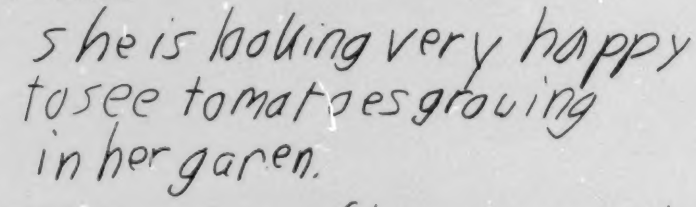
The Basal A series also contained more elaborate structures, such as subordinate clauses, infinitive phrases, and participial phrases, than did the Basal B series. For example, Basal A contained significantly more complex sentences, such as "The robin came back to the tree *carrying a straw in her mouth*" and "*When I wear the gown,* I will look so beautiful *that everyone will admire me*" (Level 2.1), whereas Basal B contained more simple sentences, such as "Dr. Penny worked in the city" and "She could fix the insides of clocks" (Level 2.1).

An analysis of structures in the children's writing revealed a correlation between the basal texts and the children's writing. Overall, Basal A children used significantly more elaborate structures than did Basal B children (see Figure 3 for examples.)

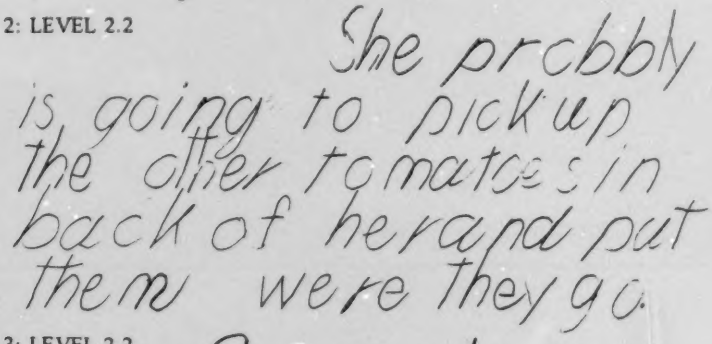
Figure 3

Elaborate Structures Used by Basal A Children

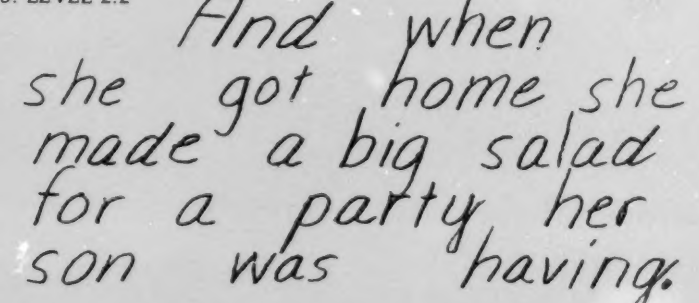
CHILD 1: LEVEL 2.2



CHILD 2: LEVEL 2.2



CHILD 3: LEVEL 2.2



If we again consider just the Basal B children reading on or above grade level compared with Basal A children, the average number of subordinate structures was higher for the Basal A children, but not statistically significant. A comparison of children in later grades would be of interest to see the course of this trend as the children mature. It may be that second grade children tend to use few subordinate clauses. Early and continuous exposure to these structures, however, may lay the groundwork for their use later on; thus differences may show up more clearly in later grades.

Format and Style. Analysis of the format and style of the two reading series showed interesting and important differences. In the Basal B preprimers, levels two and three, each sentence occupied one line (see Figure 4). This format continued into the first- and second-grade readers, although the number of such sentences decreased as the complexity of the text increased. In contrast, in the Basal A series, only a few of the beginning stories had predominantly one sentence per line, so that children who read the Basal A series were very soon exposed to other formats.

Analysis of the children's writing indicated that more Basal B children wrote one sentence per line. Figure 5 gives a characteristic example. This finding was significant only for those Basal B children who were reading below grade level, in the 1.2 and 2.1 readers, where the one-sentence format predominated. Eighty-five percent of these children used the one-sentence-per-line format as opposed to only a single Basal A child.

While the Basal B children who were reading at grade level or above were exposed to more traditional print formats, some were still influenced by the one-sentence-per-line format of the beginning texts. They wrote longer sentences than the Basal B children who were reading below grade level, but they continued to punctuate as if there should be only one sentence per line—that is, by placing inappropriate periods at the end of lines and capitals at the beginning of subsequent lines (see Figure 6). Thus, the text format of the earlier Basal B readers appears to exert a continuing influence on the children's punctuation. This finding also suggests that children learn about punctuation from their reading—a finding that concurs with Calkins's (1980) observations.

Figure 4

Basal B: One Sentence per Line

PREPRIMER: LEVEL 3

Ben said, " Stop, ducks !
You can't eat this.
No, you can't !
No, ducks ! No !
You can't eat this. "

Specific stylistic features also seemed to serve as models. In the Basal B texts, levels 1.2 and above, sentences began significantly more often with "And" than in the Basal A texts. Apparently sentences beginning with "And" such as "We live here with our mother and father. And the cat that climbed up in your oak tree was MY cat." (Basal B, level 2.2) serve as models for children's writing because Basal B children used "and" in this fashion significantly more often than did Basal A children. In fact, Basal B children used "and" to begin sentences three times as often as Basal A children. For example, one Basal B child reading at level 2.2 wrote:

> An old women went to the store. And looked around. She found some tomatoes. And she payed for them. And went home and made dinner. And then she sat and witch TV.

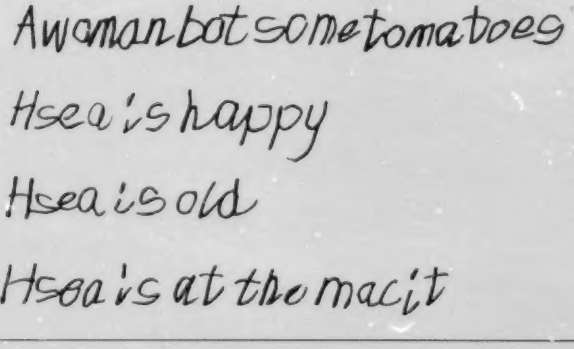
Another frequently copied stylistic feature was the use of "too" at the end of sentences (see Figure 7). This feature was found predominantly in the Basal B texts and occurred significantly more often in the writing of Basal B children, regardless of reading level. Basal B children used "too" four times as frequently as Basal A children. Although a terminal "too" appeared in only some stories of the Basal B texts, it usually appeared a number of times within a few sentences, thus forming a striking model. On the other hand, when "too" appeared in the Basal A texts, it was less conspicuous because it usually appeared only once in a story.

Other Factors. While the basal texts had a strong impact on the writing of the children, differences in classroom teaching methods, in linguistic abilities of the children, and in time spent on writing activities and outside reading also may have influenced the outcomes of this study. Because other books the children have read may influence what they write, I administered the Huck Inventory of Children's Literature (1966) (60 multiple choice questions on frequently read fairy tales, Mother Goose Rhymes, poems, and children's books) to the children in this study. Since many of the selections tested by the Huck Inventory appear in the Basal A series

Figure 5

Basal B Children's Writing: One Sentence per Line

READING LEVEL: 1.2

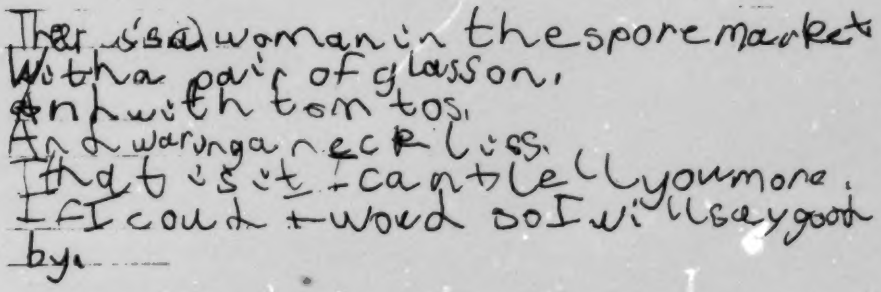


and few appear in Series B, I corrected the Huck scores for this difference. The corrected scores revealed that Basal A and Basal B children had equal knowledge of children's literature. Thus the children's outside reading is unlikely to have influenced the differences in writing that were observed.

Figure 6

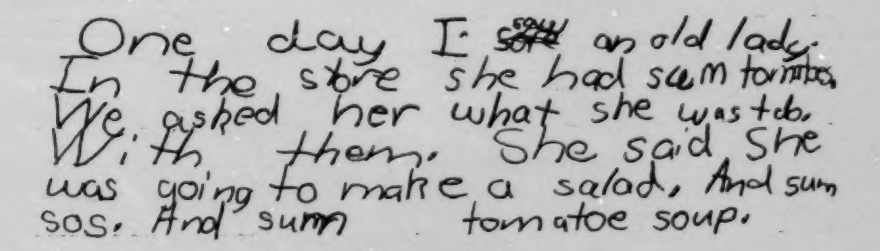
Basal B Children's Writing: Inappropriate End/Beginning of Line Punctuation and Capitalization

CHILD 1: LEVEL 2.2


Ther is a woman in the spore market
With a pair of glasson.
An with tomtos.
And waring a nec lis.
That is it I can tell (you more.
If I could I wod so I will say good
bye.

There is a woman in the supermarket.
With a pair of glasses on.
And with tomatoes.
And wearing a necklace.
That is it I can't tell you more.
If I could I would so I will say good
bye.

CHILD 2: LEVEL 3.1


One day I saw an old lady.
In the store she had sum tomtos.
We asked her what she was to do.
With them. She said She
was going to make a salad, And sum
sos. And sum tomatoe soup.

One day I saw an old lady.
In the store she had some tomatoes.
We asked her what she was (?) do.
With them. She said she
was going to make a salad. And some
sauce. And some tomato soup.

Conclusions and Implications

The findings of this study clearly showed that the writing of the children studied contained features of their reading texts. The writing of Basal B children in general was less elaborate than that of Basal A children. The Basal A children added to the linguistic complexity of their sentences by using complex verb forms, subordinate clauses, and infinitive and participial phrases. Basal B children tended to copy the format of their reading texts by writing one sentence per line. They also tended to use "And" at the beginning of sentences and "too" at the end—stylistic features that add little to the linguistic complexity of sentences.

Although this study was exploratory, the findings are striking and merit further investigation. A variety of related factors should be considered in future work, including the children's linguistic abilities and the teachers' methods of teaching writing. I plan to take these factors into account in a continuation of this work with additional samples of children's writing.

The results of this work may have important implications for educators and

Figure 7

Use of "Too" at the End of Sentences by Basal B Children

CHILD 1: LEVEL 1.2

I like Bonnie and Kim and they like me to. and I like Craig to. Craig sis next to me. and he's my fri'end. Kim is my friend too. Bonnie is my friend too.

CHILD 2: LEVEL 3.1

one day a old Lady went to the stor for food. She has a funny face. She has classes to. She has wreegel on her to. She bot some ford like Tomatas and candy broible knowing her. Know one likes her brolbe

one day a old Lady went to the store for food. She has a funny face. She has glasses too. She has wrinkles on her too. She bought some food like tomatoes and candy probably (?) knowing her. No one likes her probably (?)

publishers. In the past, many publishers have used simplified sentence structures in basal readers with the intention of easing the process of learning to read. Apparently this practice has an effect on children's writing. From the effects observed here, it appears important not to oversimplify text or to introduce stylistic features and text formats that are uncharacteristic of written English. Elementary language arts instruction would benefit, it seems, from texts that help children learn to decode and, at the same time, provide models representative of literary prose.

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Darrell Morris

Concept of Word: A Developmental Phenomenon in the Beginning Reading and Writing Processes

The relationships between the beginning reading and writing processes are interesting, highly complex, and resistant to "pat-answer" theoretical explanation. Although research interest in this area has mushroomed in the past few years—spurred on by the seminal work of Charles Read (1971, 1975)—we still seem to be in the question-asking or hypothesis-producing stage of exploring beginning reading/beginning writing relationships.

Nonetheless, the questions now being asked are theory-based and bear relevance to the teaching enterprise. For example:

1. Should writing be viewed as a secondary language process, naturally lagging behind and "feeding on" the development of word recognition ability in reading (a traditional viewpoint)?
2. Should beginning reading and writing be thought of as complementary, cyclical processes, in which growth in one area is reflected in and reinforced by growth in the other area (Clay 1979*a*)?
3. Should writing be viewed as a beneficial introduction to learning to read (Chomsky 1979)?
4. Does there exist in the minds of beginning readers a developing conceptual knowledge of wordness that underlies their ability both to read and spell words (Henderson 1980)?

The present article, aimed at kindergarten and first grade teachers, will describe in some detail two diagnostic tasks that can be used in the classroom to assess young children's concept of word in reading and concept of word in writing. It will be argued that there is a developmental relationship between children's per-

formance on the reading task and the writing task, and furthermore that by using these tasks or similar ones, teachers can monitor children's developing concepts of word without interfering with the natural processes of learning to read and write.

Concept of Word (Reading)

An understanding that must be acquired early in learning to read is concept of word or concept of the spoken word/written word match. Weintraub expressed this idea succinctly: ". . . children cannot learn to recognize words if they do not understand that words are printed units . . . they cannot match written words with spoken words if they do not understand that words are bounded by white spaces" (1971, p. 192). Until beginning readers develop a stable concept of word, until they can focus on individual words within a line of text, they will be unable to develop a sight vocabulary or attend to the orthographic patterns of words in text. Therefore, any language-based or contextual approach to teaching beginning reading must consider this important concept.

Fortunately there are several classroom teaching strategies that provide valuable insight into children's awareness of the spoken word/written word match in reading. One of these strategies, the memorization and rereading of a poem or nursery rhyme, can be used easily in the kindergarten or first grade classroom. First, the teacher introduces a favorite rhyme by reciting it a few times with a group of children. Next, the rhyme is put on the blackboard or on chart paper, and the teacher models a finger-point reading; i.e., the teacher points to each word as he or she reads the rhyme, being careful to preserve a sense of rhythm in the reading.

> Humpty Dumpty sat on a wall
> Humpty Dumpty had a great fall
> All the king's horses
> And all the king's men
> Couldn't put Humpty together again.

Finally, after several choral readings (teacher and children reading together, with the teacher pointing to the words), individual children take their turn at finger-point reading the lines of the rhyme.

The teaching sequence above provides the children with a memory of the text and a model of the reading process. By noting the following behaviors as individual children begin to read the rhyme, the knowledgeable teacher can assess the presence, absence, or fledgling development of concept of word:

1. Do they point to each word correctly as they read across the line?
2. If they err in their pointing, mismatching spoken word to written word, are they able to self-correct without teacher assistance, and continue with the reading?
3. Having read the entire rhyme, can the children identify individual words scattered throughout the five lines when the teacher points to the words in a random order? Do they identify the target words immediately or must they go back to the beginning of the line—even the beginning of the rhyme—and use contextual support for the identification?

4. After going back and re-reading a given line in the rhyme (e.g., "Humpty Dumpty had a great fall"), can the children identify a target word in the line (e.g., *great*)? Is the identification immediate or does it require a word by word contextual strategy?

Each of the behaviors above—pointing to words as one reads aloud, self-correcting errors in pointing, identifying individual words within a single line and within a five-line memorized rhyme—is measuring a child's awareness of the spoken word/written word match in reading. The measures are indirect (i.e., understanding is inferred from behavior), yet they are highly sensitive to young children's ability to map spoken language to written language at the word level (Clay 1979*a*, Morris 1980). Some teachers will want to record individual children's performance on the rhyme-reading tasks, thereby providing benchmark measures against which future gains in reading can be compared. A chart (see Figure 1) could be used for such record-keeping.

Note in the chart that the three hypothetical beginning readers seem to be in different stages of development in their ability to map spoken words to written words in text. Hazel finger-point read accurately, and following the reading she demonstrated immediate recognition of individual words within the five-line

Figure 1

Task: Rhyme reading — Rhyme: Humpty Dumpty
Date: 9/18/81

Child	Pointing	Self-Correct (Pointing)	W. Rec. (1 line)	W. Rec. (5 lines)	Spelling
(line)	1 ✓			I C	
	2 ✓		I I	I I	
Hazel	3 ✓		I	I	Phonetic/
	4 ✓		I	I C I	Transition
	5 0	✓	I		
	1 ✓			C	
	2 0	✓	C		Pre-Phonetic
Robert	3 0	✓	C		(beg.-end
	4 0	0		C C	consonants)
	5 0	0	C	C	
	1 0				Pre-Phonetic
	2 0	*NO*	0		(beg. conson.
Tom	3 0	self-	0 0	NOT	for 5 of the
	4 0	corrections		GIVEN	14 words)
	5 0		0		

Key: ✓ = perfect word by word pointing within the line
I = immediate recognition of target word
C = recognition of target word using context
0 = incorrect response

rhyme. Robert's finger-point reading was more labored and less accurate, and yet he did evidence a self-correction strategy on two lines. When asked to identify individual words within the rhyme, Robert could not do so immediately; however, he was successful in using a word-by-word contextual strategy to identify the words. Tom was unable to point to the words as he read, and later he could not identify words within the rhyme.

The reading behavior of Hazel, Robert, and Tom illustrates a developmental sequence (Holdaway 1979; Morris and Henderson 1981) through which beginning readers' concept of word seems to progress. Holdaway, referring to a class of New Zealand first graders, states:

> Five or six of the children have a clear concept of the one-to-one relationship between spoken and written words. They can point effectively, guided by a stable grasp of directional principles. . . . Approximately one third of the children in the middle range are beginning to develop a concept for "words" in a display of print. They can follow a text in enlarged type and locate words by moving through a familiar sentence from the beginning, modelling their pointing on that of the teacher. . . . The lower third of the class are at various stages in the development of emergent literacy. All have developed a love of stories and other literary forms, but their reading-like behavior does not yet closely pattern the words of a text unless they are extremely familiar with it . . . they are at various stages in grasping the idea that printed language represents spoken language in stable ways. (1979, pp. 104-105)

Even if one questions the notion of developmental sequences in general, it must be acknowledged that a simple rhyme reading task like the one described above is capable of revealing important qualitative differences in children's early reading behavior. Hazel is ahead of Robert and Robert is ahead of Tom in the process of becoming an independent reader.

Before leaving the topic, concept of word, it should be pointed out that this concept or understanding can be assessed in several different reading contexts. Holdaway (1979) has proposed the idea of "shared-book-experiences," in which teacher and children choral read enlarged or blown-up versions of favorite trade books (e.g., Bill Martin's *Instant Readers*). Later individual children take their turn at reading pages of the book. Dictated experience stories (chart stories) also provide a useful medium for observing early reading behavior. Again, choral reading of the story by a group (with the teacher pointing to the words) can precede individual children's attempts to read the lines of text. But whether the teacher chooses to use a rhyme-reading task, shared-book-experience, or dictated experience story, observation of the finger-point reading and word identification behaviors described earlier will be helpful in assessing beginning readers' concept of word.

Concept of Word (Writing)

If beginning readers do progress through stages of proficiency (awareness) in learning to map spoken words to written words in the act of reading, another interesting question arises. Is there also a developmental process underlying children's ability to write or spell English words? After a decade of research in the area of young children's "invented spellings" (Henderson and Beers 1980), we can now answer

this question affirmatively. Figure 2, adapted from Henderson (in press), illustrates aspects of the developmental nature of children's early spellings.

A teacher who administers the fourteen-word spelling list below (see *Correct* column) to a group of first graders will obtain spellings that can be categorized roughly into four developmental stages: Pre-Phonetic, Phonetic, Vowel Transition, and Correct.

Pre-Phonetic spellers perceive and reliably represent the beginning consonant element, and later the beginning and ending elements (the consonant boundaries) of one-syllable words. However, they are unable to give an accurate phonetic rendering of the vowel element. Though in most cases Pre-Phonetic spellers simply omit the vowel, some—possibly those possessing a bit more orthographic awareness—will substitute a deviant or "filler" letter for each vowel element in a list of spelling words (Paul 1976). It is as if they understand that a vowel belongs in the middle of words, but are unable to discriminate and/or represent the appropriate vowel sound. (In Figure 2 note the "filler" letter *o* for the vowel elements in *back, sink, mail, side,* and *feet*.)

Phonetic stage or letter-name spellers "hear sounds in sequence within words" (Clay 1979*a*) and represent each sound with an appropriate alphabet letter. This sequential, sounding-out spelling strategy produces systematic, readable spellings, particularly if teachers keep in mind a few characteristics of Phonetic stage spelling.

1. In representing long vowels, the children seem to use a "letter-name" strategy. *Mail* is spelled MAL because the vowel sound corresponds to the letter name, *a*. Similarly, *feet* is spelled FET, and *side*, SID.
2. In representing short vowels, Phonetic spellers often categorize in a tacit, unconscious manner the short vowel to be spelled with the nearest long vowel in place of articulation; they then use the long vowel letter-name in

Figure 2

Pre-Phonetic 1	2	3	Phonetic (Letter-name)	Vowel Transition	Correct
B	BC	(BOC)	BAC	BACK (c)	back
S	SK	(SOK)	SEK	SINC	sink
M	ML	(MOL)	MAL	MALLE	mail
J	JS		JAS	DRES	dress
T	TBL		TABL	TABEL	table
S	SD	(SOD)	SID	SIED	side
F	FT	(FOT)	FET	FETE	feet
S	SP		STAP	STAMPE	stamp
L	LR		LADR	LETER	letter
S	SK		SEK	STIK	stick
B	BK		BIK	BICKE	bike
S	SD		SED	SEAD	seed
M		MSD	MOSDR	MONSTER (c)	monster
L		LVT	LAVATR	ELAVATER	elevator

the spelling (Read 1975). For example, both the short i sound (/I/) and the long e sound (/i/) are produced in the high front part of the vocal tract. Therefore, when the child attempts to represent the short i sound in *stick*, he or she substitutes the letter name of the nearest vowel, e, producing the spelling, SEK. Likewise, a Phonetic speller attempting to spell *bed* will often produce BAD, categorizing short e (/ɛ/) and a long a (/e/) together (both mid-front vowels) and using the letter name A in the spelling.

3. Other characteristics of Phonetic stage spelling include the tendency to omit vowels when they are not "heard" in a syllable (e.g., *table*—TABL, *monster*—MOSDR), and the omission of nasal segments, /m/ and /n/, when these segments precede stop consonants (*stamp*—STAP; *sink*—SEK).

Vowel Transition spellers to some extent abandon the surface, sounding-out spelling of the Phonetic stage and choose a more abstract, if still non-standard representation of English words. Children in this stage, influenced by the standard spelling found in the books they read, begin to represent short vowels correctly (*stick*—STIK; *dress*—DRES) and to mark long vowels even though the vowel markers are often inappropriately placed (*mail*—MALLE: *side*—SIED: *feet*—FEAT). These transitional spellings, which begin to appear in late-first or early-second grade, are to be welcomed by the teacher, for they signal advancement in the child's understanding of English spelling. No longer does the child believe that spelling is a fixed, simple code in which letters map to sounds in a left-to-right, one-to-one fashion. Rather, transitional spellings signal the emergence of an underlying abstract word knowledge that must continue to develop if the child is to progress as a reader/writer.

These descriptions of the developmental spelling stages have necessarily been brief and incomplete. The interested reader is referred to Chomsky (1979), Henderson and Beers (1980), and Read (1975) for more substantial treatments.

Before leaving the topic of developmental spelling ability, a few points should be clarified. First, a spelling stage does *not* represent rigid, discrete boundaries within which a child is locked for a given period of time. Instead, the four spelling stages taken together form a continuum of word knowledge (from primitive Pre-Phonetic spelling to mature Correct spelling) through which children progress as they are exposed to reading and writing activities. An individual child could be in one stage (a Phonetic speller) or could be simultaneously in or between two stages (a late Pre-Phonetic speller or a Phonetic/Transitional speller). A child's position in and movement through the stages is of diagnostic significance to the teacher, because the rate and manner in which movement occurs will differ across individual children.

A second point regarding spelling stages might best be phrased as a question: What happens if a first grader's spelling does not "fit" the characteristics of the various developmental stages? For example, the following spellings might be termed "deviant" since they do not fit neatly into the four stages being discussed:

1. *feet* - T
2. *sink* - SAEORHK

3. *back* - BKA
4. *letter* - LRDA

When facing spellings that deviate from the developmental system, the teacher should not lose confidence in the system, but rather should use knowledge of the developmental stage characteristics to help interpret the deviant spelling attempts (i.e., to interpret what the child is trying to do while spelling the word).

Examples 1 and 2 can be analyzed in terms of Pre-Phonetic stage characteristics. In 1, the child seems to be perceiving only the ending consonant sound in the word. If this spelling behavior continues, the teacher may want to focus the child's attention on the beginning consonant element in spoken words. In 2, the beginning and ending consonants are correctly represented but the medial element (vowel) escapes perception and is represented as a random string of alphabet letters. If the teacher acknowledges what the child *was able to do* with this word, this deviant spelling should cause no alarm.

Examples 3 and 4 can be interpreted in terms of Phonetic stage characteristics. In both examples, the child has perceived each phoneme (sound) within the word and represented it with an appropriate letter. The problem lies not in phoneme awareness but in sequencing the phonemes as the child attempts to spell the word. With more reading and writing experience, phoneme sequencing should improve and the child will become a Phonetic stage speller. The knowledgeable teacher will be looking for signs of such improvement in the child's writing.

In summary, developmental spelling stages can provide teachers with a flexible framework for analyzing and monitoring the conceptual growth of primary school spellers. Not only can teachers monitor normal development through the spelling stages, but they can also use the stage characteristics to make sense of the spelling attempts of young children who have temporarily gotten off the developmental track.

Concept of Word (Reading/Writing)

Clay has stated that "many of the operations needed in early reading are practiced in another form in early writing" (1979*b*, p. 50), and Chomsky (1971) has argued that early writing via invented spelling can be a beneficial introduction to learning to read. Nevertheless, the idea that functional relationships exist between early reading and writing concepts is still a new and speculative one. Perhaps the following discussion, while not providing definitive answers, will raise hypotheses that teachers can test out in their own work with beginning reader/writers.

Thus far, concept of word (reading) has been operationally defined as the child's ability to finger-point read a memorized text and later to identify individual words within the text. Concept of word (writing) has been defined as the child's developing ability to represent the phonemic and orthographic elements in written words. Not surprisingly, these two concepts or abilities seem to be related.

In a recent study, Morris (1979) found a high correlation, $r = .79$ ($p < .01$), between beginning first graders' performance on a concept of word-rhyme reading task and their ability to represent phonemic segments in their invented spellings. When the experiment was replicated with end-of-year kindergarten students (Mor-

ris and Perney 1980), again a significant correlation was reported, $r = .67$ ($p < .01$). The following clinical conclusions were drawn: 1) The child who can easily finger-point read a memorized verse and later identify individual words within the same verse will spell at the Phonetic level or better (in this article, see Hazel, Figure 1); 2) The child who is hesitant, tenuous, sometimes inaccurate in finger-point reading, but who shows some awareness of word context, may be able to represent beginning and ending consonants when spelling words (see Robert); and 3) The child who cannot map spoken words to written words when reading back a memorized text will seldom represent more than the beginning consonant in spelling (see Tom).

While Morris' findings demonstrate a relationship between early reading and writing word-concepts, they do not explain the causal nature of this relationship. It may be that as beginning readers gradually discover and internalize what word-units are in text (i.e., letter groups bounded by spaces), they become better able to focus on the sequential letter-sound correspondences within words. This could account for the increasingly sophisticated phonetic spelling as children become good finger-point readers. However, this is just an hypothesis. It is probably safer to say that the beginning reading/beginning writing relationship is of a cyclical, mutually facilitative kind, whereby growth in one conceptual area (reading) is reflected in and reinforced by growth in the other area (writing).

To test out the concept of word (reading)-concept of word (writing) relationship, a teacher can simply administer the rhyme-reading task (Figure 1) and spelling task (Figure 2) to a group of beginning readers and compare each child's performance on one task to his or her performance on the other. Analysis of such performance will provide a framework for making ongoing diagnostic-teaching decisions in the classroom. For example, in the teacher's eyes, the child who finger-point reads easily but has difficulty representing even beginning consonants when attempting to spell, becomes a qualitatively different reader/writer from a second youngster who has difficulty mapping spoken words to written words in the memorized text but is a perfect Phonetic stage speller. These developmental anomalies in the children's concept of word, depending on their severity and duration, may or may not require instructional intervention (i.e., given more time in a supportive language environment, children can often work out on their own the conceptual complexities of the writing system). Nevertheless, the teacher who notes and understands these developmental differences will be in a better position to assist individual children when assistance is needed.

Some Final Words

It is axiomatic that beginning readers and writers, if they are to progress, must eventually come to terms with word units in spoken and written language. By coming to terms with words, we mean only this: in the act of *reading*, the child must learn to map spoken words in his or her oral language to the printed word units spatially arrayed along a line of text; in the act of *writing*, the child must be able to conceptualize the word as an object composed of letters that march left to right and correspond to sounds.

Acknowledging the importance of concept of word in the beginning reading/writing processes, however, is not synonymous with proposing a "sight word" or "flashcard" approach to literacy learning. On the contrary, it is in the context of a supportive, natural language print-environment that children may have the best opportunity to develop conceptual knowledge about words. For example, in the language-experience approach (dictated stories, shared-book experiences, creative writing), the child is encouraged to work from memory of a spoken language sequence to that sequence's graphic representation on the page. In this way, the child can be engaged in a meaningful language transaction (reading or writing the story) at the same time he or she is picking up important information about how words are represented in text.

Close observations of children's early reading and writing *behaviors* will tell us what they do and do not understand about the conventions of written language. Furthermore, our instructional decisions should be based on such observations, not on directions in a teacher's manual. Recently, Yetta Goodman (1980) captured the essence of this idea when she urged teachers to become good "kid-watchers" in the classroom. "Kid-watching" is the underlying theme of this article. I hope that the preceding pages have provided kindergarten and first grade teachers with meaningful things to watch for as they work with beginning readers and writers.

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III Composing and Comprehending: Learning and Teaching

Researchers have found that some children, during their preschool years, do become able to read and write independently without having had any formal training in reading and writing. —William H. Teale

As a teacher and parent, I have observed that reading and writing can develop in the same natural way as spoken language, provided the conditions for learning are similar. —Margot Cohn

. . . we have created learning environments for children in which reading and writing are presented as decontextualized language skills which have very little to do with reading and writing in everyday life. —Denny Taylor

. . . people not only learn to read by reading and write by writing but they also learn to read by writing and write by reading. —Kenneth Goodman and Yetta Goodman

The written language puzzle is a complex one. And, as with most puzzles, children cannot solve it by being given only one piece at a time. —Anne Haas Dyson

Reading, if it is to be communication, is reading with a sense of writer. And correspondingly, writing, if it is to be communication, is writing with a sense of reader. —Suzanne L. Holt and JoAnne L. Vacca

The processes of learning to read and to write become intertwined in mutually supportive natural language activities. —Arthur N. Applebee and Judith A. Langer

In learning to organize informational content for writing, students gain insight into how authors handle complex ideas on paper; in so doing, they are refining their schemata for comprehending this kind of content. —Dorothy Grant Hennings

William H. Teale

Toward a Theory of How Children Learn to Read and Write Naturally

A distinction has generally been made between natural literacy development and formal literacy training. Natural literacy development has been described as learning to read and write in the more diffuse and/or covert learning situations that are characteristic of home/family life (Getzels 1974, p. 48). Formal literacy training occurs in situations like the school which are organized with the specific intention of instructing the child. Researchers have found that some children, during their preschool years, do become able to read and write independently without having had any formal training in reading and writing (Clark 1976; Torrey 1969; Durkin 1966).[1] The aim of this paper is to outline an account of how such natural literacy learning in young children occurs.

Unfortunately, arranging to document systematically a child's natural literacy development has proven most difficult. It is impossible to know in advance which children will learn to read and write before going to school. Consequently, no researcher, much less any funding agency has invested the time and money necessary for describing the first three to five years of a child's experiences on the chance that that child will become a reader and writer during his or her preschool years. As a

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1. This is not to say that there is *no* direct/explicit teaching of reading and writing in these homes. Miller's (1979) research on oral language acquisition and our observations of the literacy events in the homes of preschool children (Teale, Anderson, Stokes, and Cole 1982) indicate that there are some events which would be described as deliberate teaching of language and literacy in the vast majority of homes in a literate society. However, such interactions are relatively infrequent; most of the time parents and children are simply trying to communicate, and language and literacy serve to further communication.

result we have no systematic descriptions of the occurrence of natural literacy learning in young children that could be used to get us into the topic at hand. In the absence of such information, let us begin instead by considering a fictional account of learning to read and write naturally by a somewhat older individual, a youth raised by apes and called Tarzan (Burroughs 1925).

Tarzan Learns to Read and Write Naturally

Tarzan's first encounter with the written word occurred when at ten years of age he discovered in a cabin a book with brightly colored pictures—a child's illustrated alphabet. He found in the book some pictures that were familiar to him; in addition, though,

> The boats, and trains, and cows and horses were quite meaningless to him, but not quite so baffling as the odd little figures which appeared beneath and between the colored pictures—some strange kind of bug he thought they might be, for many of them had legs though nowhere could he find one with eyes and a mouth. It was his first introduction to the letters of the alphabet. . . . (p. 43)

Needless to say Tarzan was "quite at a loss to guess the meaning of these strange figures" for he had not "spoken with any living thing that had the remotest idea that such a thing as written language existed, nor ever had he seen anyone reading" (p. 43). However, he was engrossed by the book and the "bugs" and remained absorbed in them until darkness was upon him.

A few days later he returned to the cabin and to the books which "seemed to exert a strange and powerful influence over him, so that he could scarce attend to aught else for the lure of the wondrous puzzle which their purpose presented to him" (p. 48). In addition to the alphabet book Tarzan found a primer, and the pages which were filled with only print "excited his wonder and deepest thought." He investigated the primer at length, discovered repeated patterns and associations,

> And so he progressed very, very slowly learning to read. . . . He did not accomplish it in a day, or in a week, or in a month, or in a year; but slowly, very slowly, he learned after he had grasped the possibilities which lay in these little bugs, so that . . . he knew the various combination of letters which stood for every pictured figure in the little primer and in one or two of the picture books. (p. 49)

In similar fashion did Tarzan, by degrees, learn to write after he found a number of pencils. His search and his efforts with literacy continued; and in two more years, after additional discoveries, he was able to read the primer and "had fully realized the true and wonderful purpose of the little bugs" (p. 50).

A careful look at the excerpts from Burroughs' novel reveals three ingredients which contribute to this case of literacy development which occurs naturally. The first of these is that there is print in the environment. Only by coming into contact with written language can the opportunity for the child to become literate be provided. Contact with print leads to the second ingredient in Tarzan's case: it establishes within his mind a "puzzle" to be solved. Finally, once this puzzle has been established, Tarzan investigates the print, extracts regularities from it, and so builds for himself—and all by himself—a system of rules which he employs to make sense of written language.

Constructivist Theories of Natural Literacy Development

On the one hand, the description of Tarzan's natural literacy learning is both preposterous and impossible. Any respectable theory builder would, like Holdaway (1979), stress that it is the "opportunity to observe written language being *used* by the (members of the child's community) . . . to fulfill genuine life purposes" which starts children on the road to literacy. Without occasions for noting the functions and uses of written language in society, no child could actually learn to read and write before formal instruction; the appropriate schemata could not be formed by the child.

On the other hand, there are credible and even compelling aspects of Burroughs' account. In fact, a number of parallels exist between the ingredients found in the description of how Tarzan became literate and the ideas put forth in educational and psychological literature by individuals like Douglass (1973), Forester (1975, 1977), and Hoskisson (1979) who propose theoretical accounts of how young children learn to read and write naturally. These authors, either explicitly or without directly acknowledging it, base their theories of natural literacy development upon the principles of Piagetian/constructivist accounts of learning.

Piaget (1970*a*, 1970*b*) argued that the child "builds up" knowledge through interaction with the world. He saw intellectual growth as a process of assimilating new experiences to the current state of the child's cognitive organization, a process which requires accommodation of existing mental structures and which, in turn, forms part of the mental organization which allows for intake, or assimilation, of additional new experience (Newman, Riel and Martin, in press). In this manner the child *constructs* intellectual principles and constantly reinvents his or her own organization of knowledge. Piaget has called this theory of cognitive development constructivist structuralism.

A constructivist account of development contrasts with the stimulus-response theory of psychology because it characterizes the child as an active participant in development. The simplistic "outside-in" notion of learning implied by S-R theory is replaced with the idea that the child contributes to the whole process in an "inside-out" manner by working on the environment, testing hypotheses, and generating rules. Piaget has thus incorporated into a theory of development an essential feature: its dynamic character. The child is not a passive responder to stimuli; the key to the developmental process is the child's interaction with the environment.

However, Mehan (1981) makes an important point about the limitations of the way in which this type of constructivist theory has conceived of the interaction between the child and the environment. He points out that although there is in the theory a dynamic character attributed to the construction of knowledge, it is implied that the construction is a personal and subjective act; the locus of construction is seen to be within the individual.

The personal constructivist idea of development has carried over into the literature on natural literacy development in a particular way. Several authors have drawn a distinction between *teaching* and *learning*, based, it seems, upon the notion that the heart of becoming literate naturally is subjective, and that, therefore, the

process can best be described as one of learning rather than of teaching. One of Torrey's (1969) conclusions from her case study of a black child from a low-income family who was reading and writing by the time he was four years of age illustrates this point. She says, "Reading for John seems to have been learned but not to have been taught" (p. 556). Or, as she interprets results from Durkin's (1966) research on early reading: "The findings on the histories of early readers might be summarized by saying that they were not taught to read, they just learned in an environment that contained enough stimulation and material" (Torrey 1979, p. 123).

Such comments are representative of those made by other authors as well (Forester 1975, 1977; Smith 1976, 1978; Hoskisson 1979; Doake 1981). The observations of these authors can suggest that natural literacy development is something which comes at the initiative of the child. That is to say, one can be left with the impression that the critical aspect of the child's activities which involve literacy is *learning*, the individual's abstracting of the essential features of the activities. It is easy, therefore, to infer that learning is an isolated, individualistic act.

A Social Interactional Account of Natural Literacy Development

In Tarzan's case we are provided with an example of an individual who initiates and controls completely his literacy development. There are no teachers present; hence, there is no *teaching* of any kind. Instead he progresses by virtue of his personal, solitary operations upon the "literacy environment" (i.e., the written language) which surrounds him. However, theories which suggest that instances of natural literacy development exhibited by children in our society are examples of a learning process structured and controlled by the children are in certain important respects misleading. Becoming literate naturally is an instance neither of learning nor of teaching but of *both* learning and teaching.

Of course, in one respect the child ultimately shapes his or her own mind; but in a non-trivial way the environment, or society, organizes what the child experiences and, as a result, influences the child's internal cognitive representation of and processing in (in this case) literacy. To understand better the role which environment plays in literacy development, it may be helpful at this point to discuss briefly what it means for a person to be literate. My description of this draws heavily upon two sources: the theory of activity developed by Soviet psychologists (Leont'ev 1981) and Scribner and Cole's (1981) notion of literacy as cultural practice.

Activity (deyatel'nost) is the unit of analysis which Leont'ev proposes as the basic one for the study of human cognition. According to him, psychological processes arise as a result of practical contact with the objective world. In this respect "intellectual activity is not isolated from practical activity"; cognition includes the motives, goals, means, and constraints associated with a task and is not merely context-free mental skill.

Scribner and Cole (1981) give an indication of the implications this conceptualization of psychological processing has for understanding what it means to be literate. For them, "Literacy is not simply knowing how to read and write a particular script but applying this knowledge for specific purposes in specific contexts of use" (p. 236). As such, the practice of literacy is not merely abstract skill in producing, decoding, and comprehending writing; rather, when children

become literate, they use reading and writing in the performance of the practices which constitute their culture.

With these ideas in mind let us investigate further how children outside of the context of formal schooling develop competence in the sociocultural practice of literacy. Vygotsky (1981) has stated, ". . . the very mechanism underlying higher mental functions (such as reading and writing) is a copy from social interaction. All higher mental functions are internalized social relationships." Thus, in becoming literate, children are internalizing the structure of the activities involving literacy which are conducted in the world around them.

This is not to say, however, that natural literacy development (or any other facet of cognitive development) can be explained as an "outside-in" phenomenon in the S-R sense. There are significant differences between S-R theories and the ideas of Vygotsky. Stimulus-response theory regards human behavior as unidirectionally reactive to the environment. But Vygotsky saw that the individual actively modifies the stimulus situation as part of responding to it. As Engels (1940) had put it, human activity is "the *transforming* reaction of man on nature" (italics added). Thus, while admitting the influence of the environment on human beings, Vygotsky took a dialectical point-of-view on the nature of the relationship, maintaining that humans, in turn, affect nature and create through changes in the environment new conditions for existence.[2]

In one respect there is a literacy environment "out there" from which children might abstract features of reading and writing. Considerable print exists in the preschooler's world, and virtually every child in literate societies like ours has the opportunity to observe others reading and writing. But, the romanticized example of Tarzan notwithstanding, children who learn to read and write before going to school do not do so simply by observing others engaged in literacy events and by independently examining and manipulating written language. In an important sense the child's literacy environment does not have an independent existence; it is constructed in the interactions between the child and those persons around him or her.[3]

Social interaction is the key. In fact, the whole process of natural literacy development hinges upon the experience the child has in reading or writing activities which are mediated by literate adults, older siblings, or events in the child's everyday life. Although perhaps not sufficient in and of themselves, the interactive events function as what might usefully be described as the *inducer* in the process. That is to say, such events serve an absolutely essential role in both triggering and furthering development.

Interactive literacy events are essential, I believe, because it seems that it is what surrounds the reading or writing per se that makes literacy "take" in the

2. This discussion also serves to highlight the differences discussed earlier between Piaget's individual constructivism and the notion of social construction posited by Vygotsky and the Soviet psychologists.

3. Taylor (1981) makes an interesting statement related to this point in her recent anthropological study of the literacy development of six middle class children. She says, ". . . the children do more than see their parents read or engage in literate activities on their own; for with their parents, they share the experience of print in the mediation of their relationships" (p. 79).

child. Let me explain this a bit. If we examine an event in which the participants are a parent and a child and there is some reading or writing occurring, we see at least two features of such occasions which make them distinctive and seem to play a crucial role in the child's learning to read and write. First, in these situations the child is an actual participant in the activity, experiencing the motives, goals, and conditions associated with the activity as they relate to the reading or writing which is going on. Such experience is important, for as was stated above, these factors are part and parcel of becoming literate.

A second critical feature which surrounds the actual reading or writing is speech. The role which this accompanying speech plays in the child's becoming literate cannot be overemphasized. Reading and writing for the young child are in their very beginning stages conducted interpsychologically, i.e., in the interaction between the literate person(s) and the preschooler, and speech is what enables literacy to be conducted interpsychologically. Although children who will later become "natural readers" (as well as many other children) may not be able to read or write in the "normal" sense of the word when they are one or two years old, they do participate in literacy events at this stage—with the help of the older person(s).

An example of an interactive literacy event. Note the following example of how two-and-one-half-year-old Donna (D), a child from a middle class family, actively takes part in reading a book about growing a vegetable garden. We join the interaction between Donna and her mother (M) a little over half way through the book.[4] (The actual language of the text is reprinted in italic here.)

Mother: *And when the rain forgets to come down, who cares! We'll just make our own.* What are they doing?
Donna: Umm. They're pouring what?
M: Right! They're pouring what?
D: Pouring water.
M: They are! Oh, do you like that?
D: Yeah.
M: (M turns page) *And suddenly one day our garden is full of delicious vegetables, ripe and ready to eat. Hurry! Hurry! We must pick them now.* You turn the page? (D. turns the page) *Come, look at what we grew! And we have so much, enough for us all and all our friends too!* What are you doing?
D: I'm eating 'em.
M: Are you gobbling them all up?
D: Uh-huh.
M: Can you tell me what some of those vegetables are? Can you show me where the tomatoes are? (D points to tomatoes) And where's the lettuce? (D points to beans) No, that's not lettuce.
D: (Undecipherable)
M: Where's the lettuce? Where's the lettuce that we make the salad out of? (D points to turnips) Right there? Those are turnips.
D: What is that? (Points to lettuce)
M: That's lettuce, and that's cabbage (pointing). And where are the green beans? (D. hesitates) Right there! (M points to beans)

4. The segment of the transcript presented here is taken from an audio-tape made by the mother. No observer was present during the taping. Non-verbal actions were added to the transcript as a result of a conference held after the taping between the mother and the author.

D: Right there.
M: And what's the dog doing?
D: He's holding the (unintelligible).
M: He's watching the little boys and girls.

The mother's motive for reading books to Donna is *not* to teach her how to read. An interview with the mother revealed that she read to Donna because she enjoyed sharing pleasurable experiences with her daughter. The mother bought this particular book because the family was at that time growing a garden at home, and she thought it would be interesting and informative to Donna to read a book about gardening. Thus, any literacy development which results from this event or other events like it would certainly be classified as natural in the terms we have been using here: there is no training organized with the specific intention of instructing the child in reading and writing. Yet notice that running through this interaction is a quite regular pattern which is being played out, one intimately bound with the language of the event:

1) M reads a segment of text to D.
2) M asks a question about the picture accompanying the text.
3) D replies to the question.
4) M evaluates D's reply.

The mother is, in response to Donna, structuring the situation considerably with her language and actions so that Donna might be able to participate in the storybook reading as fully as possible. The reading becomes an interpersonal activity, and Donna takes part in it. It is in this sense, I think, that learning to read naturally might profitably be conceptualized as a process involving teaching as well as learning. Such a conception recognizes that the child is structuring the situation and is active in the learning process. But insofar as the literacy environment does not exist "out there," insofar as it is a social accomplishment in which the adult plays a significant role, this social interaction is the teaching aspect of natural literacy development. Of course, this is not teaching in the traditional, or formal, sense. But teaching is a "fall out" from this social situation.

In the storybook reading episode Donna's mother highlights certain aspects of reading and written language by the way she organizes the event. Among other things, her questions involve Donna in identifying the objects, people and actions present; her having Donna turn the pages involves Donna with the conventions of books; her reading intonation signals a difference between written and oral language. Thus, Donna's early literacy experiences are structured in particular ways, and the manner in which Donna and her mother interact jointly to construct storybook reading events is a good example of how children's reading and writing activities are conducted interpsychologically.

In an even earlier stage of children's book reading experience than that illustrated in the example with Donna, the regulation may be almost totally provided by the adult. Ninio and Bruner (1978), for example, found from their analysis of a picture book reading episode with a mother and her one-year-old that the mother supplied to the linguistic interaction with her pre-verbal child all of the steps involved in the interaction. The authors argued that this "scaffolding" enabled the

child to participate in the dialogue so that development in labeling, one of the activities being practiced in the event, could be achieved.

Cazden (1979) reminds us, however, that the term *scaffold* "is a good name only if one remembers that this is a very special kind of scaffold that self-destructs gradually as the need lessens, and is then replaced by a new structure for a more elaborate construction" (p. 11). Research shows this to be the case. Ninio and Bruner's examination of picture book reading episodes when the child in question was somewhat older showed that the interaction became dialogic; the adult no longer assumed both roles. DeLoache (personal communication, Note 1) also has found that two-year-olds are much more active in picture book reading episodes than are children of eighteen months. Heath's (1981) ethnographic studies likewise indicate that slightly older children appropriate pieces of the interaction which the mother had previously supplied.

From the interpsychological to the intrapsychological. Thus, we have indications that what is happening is that the process of conducting the activity is transferred from the interpsychological to the intrapsychological. As the child becomes more capable of carrying out the task for him or herself, the adult gradually "raises the ante" and removes certain of the scaffolding, the result being that the child assumes more responsibility for completing the task.

As another interesting example of this process, Sulzby (personal communication, Note 2; Cox & Sulzby 1981) has found that very often kindergarten children will both ask questions *and* answer them as they compose or dictate stories. She traces the origins of these questions to ones asked by adults in previous interactions with the children when the adults were attempting to help the children formulate their stories. It would seem that these chidren do indeed demonstrate that they are appropriating more of what was previously an interpsychologically constructed event and are moving toward conducting it intrapsychologically.

This process of transferance from the inter- to the intrapsychological occurs in learning situations which Vygotsky (1978) termed the zone of proximal development. He describes the zone of proximal development as:

> . . . the distance between actual development as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (p. 86)

In series of everyday interactions involving literacy in the zone of proximal development the child, as it were, internalizes aspects of the reading or writing activities and eventually comes to the point where he or she conducts these activities for him or herself.

It should be emphasized that in the case of literacy development, story and picture book reading episodes are only one type of complex, interactive, literacy-speech event which at first are largely scaffolded by the adults and are progressively appropriated into the child's own independent competencies. As well as encounters with books, the children are simultaneously experiencing a range of other activities which are part of the daily life of the home and community and have literacy embedded in them. These reading and writing events and the speech which accompanies them are likewise significant aspects of becoming literate naturally.

I have proposed, then, that the inducer for natural literacy development lies in the reading and writing experiences which the child has with parents and/or literate siblings (remembering, of course, that these experiences typically include more than merely the reading or writing themselves). This is not to deny the extreme importance of the child's independent observations and explorations of and practice with written language. On the contrary, Holdaway's (1979) work indicates that children's individually conducted literacy events, especially their independent re-enactments of familiar story books which they have previously experienced in interactive events with caregivers or older siblings, serve to develop several aspects of their abilities in reading and writing, and Doake's (1981) follow-up research on this topic supports his finding. Also, Ferreiro's (Ferreiro and Teberosky 1979; Ferreiro 1980, 1981) extensive interviews with preliterate children reveal that in their efforts to understand the culturally elaborated writing system which exists around them, children develop strategies which they have certainly not "seen" being used by the adults in the culture but which nevertheless serve important purposes in furthering their growth in literacy. Yet another example of how children's individual efforts contribute to literacy development can be seen in the research in preschool children's spelling which Read (1971, 1975) conducted. He found that children do independently attempt to resolve conflicts they find in the spelling system of English and in so doing produce invented spellings which other researchers have found can be described in terms of a developmental progression (Henderson and Beers 1980).[5]

However, the interactive events serve in two ways as the *sine qua non* of the roots of learning to read and write naturally. On the one hand, such events are "substantive" in that they put the child in touch with the functions, uses, processes, and conventions of literacy in our society in general and in the child's family in particular. On the other hand, adult-child interactions around literacy are "motivational" for the child; they serve to forge links between positive affect and reading and writing and thereby sustain or strengthen the child's desire to engage in these activities independently. In practice, these two aspects of literacy events with the children—the substantive and the motivational—act as reinforcers of each other. As Schickedanz (1978) says of story reading events, a "situation that is loaded with positive affect . . . is the same situation that is loaded with information for the child" (p. 54).

By being engaged in activities which have literacy embedded in them and in which the reading or writing, and the oral language which accompanies them, are played out in the social interaction between the child and the more experienced, literate person, the child is able to participate in the activity itself, gradually internalize the social relationships, and thereby develop personal competencies in reading and writing.

Thus, in order to formulate a theory which accounts for the process of children's natural literacy development in the preschool years, we need to keep in mind that literacy is, above all, a social process. The environment must provide the opportunity for children to observe written language functioning in the everyday ac-

5. Also, it should be kept in mind that the child's independent observations and explorations are conducted in a literacy environment which is in the first place socially constructed.

tivities which surround them and the opportunity to participate in activities where reading and writing are involved. The dynamics of learning to read and write naturally include both interactive events with parents or literate siblings where there is a gradual transfer from the interpsychological to the intrapsychological and simultaneous independent investigation of and practice with written language by the child.

Literacy development and oral language development. Many authors (Y. Goodman 1980; Holdaway 1979; Hoskisson 1979; Torrey 1979; Weeks 1979; Clark 1976; Forester 1975; Douglass 1973; Huey 1908, among others) have likened natural literacy development to oral language acquistion, and I think the analogy is a fitting one. However, I also think that we must recognize what language development researchers such as Snow (1979, 1977), Miller (1979), Bruner (1978) and others have shown us recently: that certain aspects of native language development such as conversational patterns and discourse forms are dependent upon particular forms of help. True, the child is constructing language, but it is also the case that the child is "massively assisted by adults" (Bruner 1981) in this endeavor. At the semantic level parents' speech is modified for their children; interestingly it seems to be modified as a result of the parents' perceptions of the child's linguistic and cognitive abilities, ideas, interests, and so forth. Thus, learning one's native language might most profitably be described as an interactive process, one which involves both teaching and learning. We must also keep in mind, however, that the teaching-learning is a spinoff of a language process, the goal of which is, above all, communication.

Goodman and Goodman (1979) have argued that natural literacy learning is not a process which "unfold(s) in an environment free of obstructive intrusions. Teaching children to read is *not* putting them into a garden of print and leaving them unmolested" (p. 139). In our zeal to accord the child a central place in the learning process we must not obscure the fact that the environment which the child experiences is organized in highly specific ways.

Obuchenie. Historical evidence (Schmandt-Besserat 1978; Goody 1977) and recent anthropological and psychological research (Heath, forthcoming; Scribner and Cole 1981; Reder and Green 1979) suggest that reading and writing (like language) are, above all, social processes and that a profitable way to conceptualize them is in terms of the overall contribution of literacy activities to the ongoing struggles of people to understand and deal with their environments.

Because literacy is socially accomplished, it develops through social interaction, with children internalizing not in a receptive but in a mutually constructive way the structure of the activities involving literacy in which they participate and which they observe being conducted in the world around them. Thus, natural literacy development entails active input from both the perspective of the learner and the perspective of the environment as parents engage in reading or writing which the child has the opportunity to observe, as parents(s) and child engage in interactive literacy events, or as the child independently attempts to read or write. Sutton (1980) points out that the Russian term *obuchenie* [a'·bu·cɛn'·i·ɛ] which is at the heart of Vygotsky's theory of development means both teaching and learning, "both sides of the two-way process." It is this notion which I think plays

an indispensible role in a theory of natural literacy development. As Sutton puts it, "not only do children develop, but we develop them" (p. 170).

Scollon and Scollon's (1981) analysis of the literacy development of their two-year-old daughter Rachel (even though she was not herself an early reader) illustrates this point very nicely and will serve as a final example in our discussion. While working among the people of Ft. Chipewyan, Alberta, the Scollons noticed that Rachel's typification of literacy was quite different from that of the Athabaskan children in the village. In their effort to understand the nature of those differences, they examined how it was that Rachel had come to know what she knew about reading and writing.

These parents made no conscious attempt to teach their daughter to read and write. They acknowledge the influence of such factors as being read to and having the opportunity to live in an environment where the parents read and write frequently as being important in the development of Rachel's orientation to literacy, but they also go on to discuss at some length two other very interesting aspects of the daily interactions between them and Rachel which acted to socialize her into literacy.

One of these was *vertical constructions*. Vertical constructions develop in interaction with others. In a vertical construction the child says something, the adult responds to the child's utterance by asking what about it, and the child says something further. An example of vertical construction taken from R. Scollon's earlier study of oral language development is as follows:

> Brenda: Kimby
> Mother: What about Kimby?
> Brenda: Close. (Scollon 1976)

The first utterance can be seen as a topic (given information), the mother's response as a request for comment, and the child's answer as the comment (new information). The Scollons go on to say the following about this example:

> As the child develops she begins to take over both roles. That is, Brenda soon began to say both the topic and the comment. As soon as these became prosodically linked as a single utterance the whole process shifted up a level. The whole topic-comment pair was taken as given and the interlocutor sought another comment. (p. 92)

This process is an excellent example of development as a social interactional phenomenon, one which has built into it the notion of progressive transfer of support from caregiver to child and which was later picked up in the notion of "self destructing" scaffolding dealt with earlier in this paper. What makes this discussion relevant to our topic of natural literacy learning is that the Scollons found vertical constructions to be "an important preparation for literacy." They argue that the discourse structure resulting from a continual upgrading of the proportion of new information in utterances comes to resemble very closely the structure of essayist literacy. Thus, we can see that the interactive mechanism of vertical construction plays a role in learning to read and write and that, furthermore, this "natural" interactional pattern is an example of the environment working on the child as the child simultaneously works on the environment.

So, too, is there a mutually constitutive character to the second aspect of

Rachel's socialization into literacy which the Scollons discuss, the "fictionalization of self." The fictionalization of self is the ability to distance oneself from participation in an event and describe it as if it were happening to someone else. An example of this which the authors describe is Rachel's telling a story about an incident which had happened in her own life a few days earlier. The story is rendered as being about *a* girl (referred to as *she* throughout) and *her* mom (self-corrected from Mom). The Scollons argue, and others (e.g., Applebee 1973; Harding 1937) have supported this point, that the fictionalization of self is "an essential ingredient of the authorship and readership roles." Furthermore, they contend that parents "coach" their children in the development of this essential ingredient and that it is "natural for a literate parent to do this."

Therefore, we should probably not be surprised that Rachel answered her father's question, "Who taught you to write stories?" by saying, "Nobody. I learned it myself." But we should not be misled into thinking that she did *just* learn it. As the Scollons say at the beginning of their paper, "The unfolding of this natural development was carefully constructed in the interactions between caretaker and child. *Things simply did not happen*" (pp. 57-58, italics added).

The concept of *obuchenie* paves the way for understanding how it could be that the environment has profound influences on the child's learning to read and write, while at the same time the child is involved in "independent invention" and construction of written language systems. The child's interactions with the physical/sociocultural world of written language account for much of the growth which occurs. But the perturbations, or contradictions, which arise from the child him/herself are also important factors in the process. In a sense it is the resolution of these perturbations which mark the dramatic moves from stage to stage which the child takes in literacy learning. And in this respect it can be seen that the characterization of natural literacy development as learning rather than teaching is accurate. However, we must not neglect the indispensible role which social interaction within the literacy "environment" plays in the growth process.

Conclusion

We have been discussing in this paper the phenomenon of natural literacy development, instances in which children learn to read and write without having had formal training in literacy. I have proposed that neither the term *teaching* nor the term *learning* adequately describes such a process. Rather, natural literacy development might most profitably be characterized as a "mutually constitutive" (Mehan and Wood 1975) process. The interactions which lie at the heart of learning to read and write are truly two-way streets, with the child affecting the environment as much as the environment affects the child. Literacy is not simply an individual psychological process; instead, it is intimately linked with the sociocultural practices in which it plays a part. When the child learns to read and write in the course of everyday events, he or she internalizes a coordinated set of actions which involve using a particular technology in certain settings to achieve particular goals. The source for this whole process lies not in the individual, as the Tarzan example and certain constructivist-oriented accounts imply, but in the *mutually* constructed interactions of individual and functioning social world.

In fact, the term *natural* is an unfortunate one, for it implies that any other way of learning to read and write is unnatural, a position which seems to lead to the distinction which Rousseau attempted to make between nature and culture. Such an implication is misleading in certain respects. Deliberate teaching of reading and writing is not really unnatural; it may be closely linked with the institution of schooling, but that does not make it any less natural in our culture than what goes on in the home. There are important differences, of course; but, in fact, both settings are socioculturally organized rather than naturally occurring. Thus, *informal* may be a better label for describing literacy development which takes place in situations characteristic of everyday home and family life.

This is not to say, however, that the distinction which several authors (for example, see Smith 1982 and Goodman, in press for their most recent statements on this topic) make between teaching and learning as they occur in school classrooms is not a useful one. On the contrary, when these authors make such statements as ". . . although learners learn all the time while teaching is occurring, they are not necessarily learning what is being taught" (Goodman, in press), they remind us that we cannot assume that learning and teaching in such situations are isomorphic. However, it is not my intention to equate teaching in traditional classrooms with what I mean by *teaching* in this paper. Nothing could be further from my mind. Though the argument remains that teaching is an aspect of the informal literacy experience which natural readers/writers have in the home, this teaching is not necessarily like what goes on in schools.

In schools it is often (though certainly by no means always) the case that the adult arranges an ill-contrived opportunity for children to become literate precisely because he or she *fails* to make a distinction between teaching and learning. Frequently the adult assumes that the typical literacy curriculum with its progression from part to whole and its hierarchy of skills represents a model of how children learn to read and write. The belief is that literacy development is a case of building competencies in certain cognitive operations with letters, words, sentences and texts, competencies which can be applied in a variety of situations. A critical mistake here is that the motives, goals, and conditions have been abstracted away from the activity in the belief that this enables the student to "get down to" working on the essential processes of reading and writing. But, as has been argued above, these features are critical aspects of the reading and writing themselves. By organizing instruction which omits them, the teacher ignores how literacy is practiced (and therefore learned) and thereby creates a situation in which the teaching is an inappropriate model for the learning. Some children are able to maintain the whole and learn despite the teacher; others accept the teaching model as a way of learning and become its victims.

In my opinion this way of organizing instruction has little to do with the zone of proximal development or the concept of *obuchenie*. Distinguishing between teaching and learning is absolutely essential for analyzing and understanding the problems inherent in the type of situation just described. However, there is value in bringing teaching and learning together for purposes of describing the phenomenon of "natural" literacy development. Perhaps what occurs in "natural" literacy development is the "real" teaching, and the misguided efforts frequently

perpetrated in classrooms are inadequate attempts to replicate it. Holdaway captures the spirit of this argument very nicely when he says:

> Furthermore, the way in which supportive adults are induced by affection and common sense to intervene in the development of their children proves upon close examination to embody the most sound principles of teaching. Rather than provide verbal instructions about how a skill should be carried out, the parent sets up an emulative model of the skill in operation and induces activity in the child which approximates towards use of the skill. The first attempts of the child are to *do* something that is *like* the skill he wishes to emulate. This activity is then "shaped" or refined by immediate rewards, both intrinsic and extrinsic, for targeting approximations. The shaping is supported by ready assistance provided on demand, and by good-natured tolerance and almost inexhaustible patience for inappropriate responses. From this point of view, so called "natural" learning is in fact supported by higher quality *teaching intervention* than is normally the case in the school setting. (p. 22)

Rather than directing attention toward either teaching or learning, we might do well to explore the dynamics of *obuchenie*, of teaching-learning, in order to understand more fully how it is that "natural" literacy development proceeds.

Notes

1. This project is analyzing video-taped sessions of mothers "reading" picture books to their 18-36 month-old children. Dr. DeLoache can be contacted at the School of Human Resources and Family Studies, University of Illinois at Urbana-Champaign.

2. This finding is one from an extensive study which is developing a theoretically-based description of young children's emergent literacy abilities and the children's transition from pre-reading to independent reading. More information on the project "Beginning Readers' Developing Knowledges of Written Language" can be obtained from Dr. Sulzby at the School of Education, Northwestern University.

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Margot Cohn

Observations of Learning to Read and Write Naturally

When Isaac was four years old, he copied the names of six of his favorite superheroes and attached the "signs" to the refrigerator. When one of the signs disappeared, Isaac exclaimed, "Hey, where's my Aquaman sign?" Indeed, it was missing.

This incident is significant because it reveals that a young child is able to write words which are meaningful to him and to recognize what he has written. His reading and writing skills are developing naturally and simultaneously. He is well on his way through a progression of developmental literacy stages.

As a teacher and parent, I have observed that reading and writing can develop in the same natural way as spoken language, provided that the conditions for learning are similar. These conditions include a stimulating environment, encouragement, and a relaxed adult attitude. Parents and teachers should be as patient and tolerant during the development of children's literacy skills as they are while speech develops.

Holdaway describes learning in this natural way as

> . . . developmental learning, which is highly individual and non-competitive, short on teaching and long on learning, self-regulated rather than adult-regulated, goes hand in hand with the fulfillment of real life purposes, and emulates the behavior of people who model the skill in natural use. (1979, p. 14)

Learning to read naturally starts when parents read to their young children and let them handle books (Holdaway 1979). Children learn the language and conventions of print, develop concentration and high expectations of print. They learn that the language of books can be as meaningful as the oral language of their daily lives, and it soon becomes apparent that their own language can be written down to communicate meaningful things to others.

Frank Smith maintains that

> children must have two fundamental insights before they can learn to read . . . (1) that print is meaningful and (2) that written language is different from speech. (1977, p. 386)

Children learn to speak and understand speech when they become aware that language relates to the things which happen in their world, and therefore have meaning.

> A similar insight—that differences on a printed page have a function, that they are meaningful—must also be the basis for learning written language. (Smith 1977, p. 387)

The children's second insight, that speech and written language are different, is acquired "by hearing written language read aloud" (Smith 1977, p. 393). Children become familiar with written language by hearing the language of literature and other print within their environment, just as they learned oral language by listening to complex, but meaningful speech.

Emergent reading and writing, like spoken language, begins with gross approximations (Clay 1975; Holdaway 1979). In oral language development, approximations are welcomed. In reading and writing, too often they are corrected and discouraged. Children go through a progression of stages in reading and writing as they did in oral language development. This progression must be recognized, understood, appreciated, and nurtured by parents and teachers.

As the mother of two young children (Anna, age three years, and Isaac, age four and one-half years) I have observed the natural, developmental learning process described above. My observations confirm the contention that developmental learning of language arts is a successful route to literacy.

My children's environment is "alive" with spoken language and print. Since the age of six months, each child has been read to and has handled books for several hours during each day. Anna, from the age of one week, listened during most of Isaac's reading time. New books were frequently introduced; although many were beyond their word-by-word comprehension, all were apparently interesting and meaningful to them. Many books were repeatedly requested and re-read.

The books covered a wide range: nursery rhymes, nursery tales, fairy tales, classic and contemporary children's literature, factual picture books on many subjects (some of which were paraphrased). The reading was almost always initiated by the children, who seemed to love the books and the attention given to them by the reader. The best part of all this reading was that we thoroughly enjoyed it. It was a time of closeness and sharing on many levels.

The children's "literacy experiences" were related to their real-life experiences. For instance, they looked at and were read books about animals; this was followed by trips to the zoo or the Natural History Museum. Then we returned to the books. These experiences enhanced their literary experiences, and vice versa.

Each child has attended nursery school since the age of two and one-half years, but neither has had any formal training in reading and writing. At home there was never any deliberate teaching, no learning sequence imposed, and little correction given. Both in school and at home, adults have been readily available as resource persons.

Through "kid-watching" (Goodman 1978) and recording my observations, I have found that both children are aware that oral and written languages are different. Not only do both have print-awareness, but also they engage in reading-like behavior and simultaneously, are beginning to write.

Emergent Reading

In the children's reading-like behavior (Holdaway 1979), their construction of the surface structure of stories is not accurate, but nothing essential to the meaning of the story is omitted. They have learned the language of literature, the language seen in their environment, and the conventions of print. They know that print "talks."

Some of my observations illustrate the children's reading-like behavior. For example,

> Anna sits for 30-40 minutes "reading" books or the newspaper "like Daddy."
>
> She sets up dolls in a semi-circle, like story-time in school, and "reads" aloud to them, occasionally turning the book to face the dolls, so that they can see the pictures.
>
> In the drugstore, when asked which kind of toothpaste she wanted, she replied "Aim." When asked "Is this Aim?" she replied, "Yes." When asked how she knew, she replied, "Because it says, 'Aim—A-I-M.'"
>
> On one occasion, she pointed to the stove and asked, "What does this say?" She was told that the signs say "right rear," "right front," etc. All day, when passing the stove, she ran her finger under the words and repeated them. The next day she remarked, "Mommy, I know how to read this: 'right rear,'. . . ."

Isaac, who is older, exhibits behaviors reflective of a later stage of emergent reading development. For example,

> He frequently sits with a book and slowly and carefully "reads" it to himself—sometimes silently, sometimes out loud. He reads to Anna. The story line is always accurate; there is an approximation of the text with many of the printed words included.
>
> In the garage, Isaac underlines words from left to right with his finger and reads: "Service," "Downstairs." He pauses at the spaces between words.
>
> When asked how he knew that a tube of toothpaste was "Crest," he replied: "Because it says 'Crest,'" and ran his finger under the word.

Isaac made the following remarks:

> "That flag says NYU. My school has a new flag, but it doesn't say anything."
>
> "I can read this cereal box. It says 'K.' And this one says '19.'"
>
> "This says 'Keds' and this says 'Buster Brown.'"

Other observations show examples of the children's print awareness, i.e., their understanding of concepts such as letters and words. For example:

Anna pointed to washing instructions on her shirt and asked, "What does this *say*?"

She handed me *Make Way for Ducklings*, saying: "I know the story, but I don't know the words. Tell me the words."

While "reading" *The Story of Ping*, she asked, "Where does it say 'Ping?'" The word was pointed out to her. She pointed to the author's name, and asked "What do these words say?" When being read to, she picks the word Ping out of the text on each page.

In the bath, she said "I-V-O-R-Y: this says 'Ivory.'"

Isaac, after reading out loud while running his finger under the words, asked, "why are there words left over?"

When looking at a signature on a lithograph, he asked, "Why can't I read those letters?"

While reading a dinosaur book, Isaac asked, "Where's the word Brontosaurus?" It was pointed out, and he ran his finger under the word and said "Bron-to-saur-us. If you had to say Bron-to-saur-us, it's a long word. But if you just say Brontosaurus, it's not so long."

I recently taped Isaac's and Anna's reading of *The Fire Cat*. The book had been read to the children approximately ten times over a period of several months. The tapes were made after a two-week period during which the children did not hear the story. The children demonstrate Holdaway's principles of the reenactment behavior of reading (1979). They read from the first to the last page of the book (sixty-three pages), identifying page by page the descriptive and active aspects of the plot.

The following reenactments of the text reveal that while the syntax of the text is approximated by the children, there is evidence of deep processing of the text. Some of the formal written language is recalled.

Text:	*Reenactment by Anna:*
After a time, the wind began to blow. It blew and blew and blew. And the rain came down hard. It came down harder and harder.	It started to rain and pour.
"My goodness, Pickles," said Joe, "what big paws you have!"	"Boy! Your paw is so big!"
But suddenly the firebell rang. All the firemen ran to a big pole and down they went.	Suddenly the firebell ringed, rang (self-correction of grammar). All the Firemen had to rush and slide down the pole.

Text:	*Reenactment by Isaac:*
At the next fire, he jumped down	At one fire, Pickles put his paws

from the truck. He ran to a big hose, put his paws around it, and tried to help a fireman shoot water at the flames.	around the fire hose and helped the fireman do his work.
Pickles is a cat who wishes to do big things.	He wants to do grown-up things.
But Pickles did not want to sit on a pretty chair. He did not want to play with toys. So he ran back to his barrel in the yard. And he began to chase the little cats again.	But Pickles didn't want to play or sit in the chair. He wants to go outside and go to his barrel. So he went outside and started chasing the little cats again.

The children incorporate dialogue into the text. For example, Anna says:

> And the fireman climbed up the ladder and said, "Here, come little cat." And he came.
>
> So he said to Mrs. Goodkind, "Is this your cat?" "No. Can he be your firecat?" "Yes."

Isaac's incorporation of dialogue is more complex. He read:

> One day when Mrs. Goodkind was bringing out Pickles' food, she said, "You're not a bad cat, you're not a good cat, you're bad and good, and good and bad." And Mrs. Goodkind picked up the mix-up cat and took him into her home.
>
> Then Pickles saw Mrs. Goodkind through the window talking to—um—on the telephone. "Pickles, the firemen are coming." A firetruck drove up the street and stopped at Pickles' yard.

The children showed an understanding of the conventions of print. They started at the beginning of the book, sometimes ran their fingers under the words, turning pages at the appropriate times. Isaac was aware when a new story began. When the title in the text read "The Old Tree," he said, "Here's the next story."

The children self-correct their reading. Anna says:

> So he went to the chief and said, "Can this be your—my own—firecat?"

Isaac read:

> "One day the firechief called everyone to his desk—called all the firemen to his desk."

Emergent Writing

I observed a progression of stages leading to writing skills. The first stage was the children's natural interest in the sounds of letters. For example, Anna said,

> "Seth—Ssss—S for Seth."

One morning, Isaac said,

"The first letter in jelly is juh, juh, J."

The children's language play, using their knowledge of phonology, is demonstrated by a dinner conversation:

> Anna: "There's an 'oo' in Chinese food."
> Isaac: "Chinese food starts with F. F for food. F, F, F. Then comes D."
> Anna: There's an N in Chinese food. *N*ese. Hey, knees!" (pointing to her knees).

Interest in the sounds of letters leads to an interest in spelling. For example,

> Anna, on hearing the story of Peter Pan, said, "this word starts with C." (Points to "Captain.")
>
> She said "This says Ping because it has a P in it."
>
> "How do you spell 'wet paint'?"
>
> Isaac, while reading a yogurt label, said, "Ba-na-na. You see, this word [low-fat] can't be banana because it starts with L."

Isaac's other examples include:

> "What's a very bad word that we don't use in our house that starts with 'S'?"
>
> "What does C-A-A-S-I spell?" (Answer given—Caasi.) "Oh, my name spelled backwards is Caasi!"
>
> "This word has the same number of letters as 'Margot'."

Isaac is beginning to invent spellings. For example:

> "You spell sky 'C-H-A-I.'"

He shows an awareness of syllables in what he calls Robot-talk, when he pauses between syllables: "I have pow-ers, I am go-ing to tra-vel in space."

The next stage was playful "writing," invented by the children. For instance, while eating round pretzels, Anna said, "Here's an O, a big C, a medium C, a small C," as she bit off pieces of pretzel. She remarked, "Look, I made a P with my arms—it's upside down."

Isaac said, "I know how to make a D in the air; make a C and go like this. I can make an A and a T with my head." (Moves head.)

Isaac's and Anna's actual writing demonstrates the observations of Holdaway (1979) and Clay (1975).

Holdaway points out that

> . . . the incidence of writing-like behavior complements reading-like behavior and displays the same characteristics of personal initiative and approximation. (1979, p. 48)

He has observed that

> . . . most children engaged in active writing as they learned to read, or before they learned to read. It was evident that children showed a great interest in print in the environment—on TV, on labels, in the names of cars, etc. (p. 60)

Clay (1975) states that children show great flexibility when beginning to write,

Figure 1
Isaac's Aquaman Sign

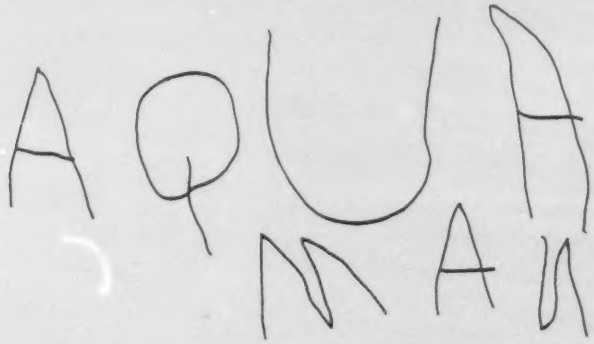

Figure 2
Anna's Words and Illustrations

both in page arrangement and letter and word formation. Their writing is meaningful to them; in a more permanent form it communicates ideas, feelings, and concepts which are important to them.

Isaac's and Anna's writing (Figures 1 and 2, p. 556) demonstrate this flexibility and personal meaning. When Anna drew Figure 2, she said, "The straight lines are the words." This demonstrates an awareness that text, in straight lines, accompanies illustrations.

Holdaway writes:

> the most important discovery that we made was that the much lauded bed-time story situation is only half the picture; practice of reading-like and writing-like behavior completes the picture. A noteworthy feature of this behavior is that it arises naturally without direction by parents—and perhaps that is one reason why its significance has been overlooked. (1979, p. 61)

One sees "independent behavior" on the part of children—"self-regulated, self-corrected, and self-sustaining" (p. 61).

Holdaway's marks of emergent literacy seem to exist in Isaac's and Anna's reading and writing behavior. The children operate at a "level of deep semantic processing" (1979, p. 52). They approximate, which is "crucial and healthy" (p. 52). They demonstrate personal joy, and are highly motivated. Their behavior is reinforced as it was in learning spoken language.

Observing children at home or school produces examples which show what children know about their oral and written language. If parents and teachers recognize this, they can help children to develop their literacy skills by responding appropriately to their needs. If "developmental learning" is successful in the home, it should be successful in school. Perhaps what is needed is an extension of this kind of learning upward into the grades; children need to be given the opportunity to use their language competence in a rich learning environment with resourceful teachers. The goal is literacy.

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Denny Taylor

Translating Children's Everyday Uses of Print into Classroom Practice

At my interview for graduate school in 1974, the professor looked at my papers and then, without warning, banged his hands on the desk and said, "What's a schwa?" Blankly, I had to tell him that I did not know. He patiently explained the term to me and eventually I was admitted to the program. Several months later, one of my assignments was to observe a "remedial" reading lesson. I sat in a classroom and watched in awe as a group of third, fourth and fifth graders moved with apparent ease through the carefully orchestrated activities, accruing M&M's for their finely tuned skills. At the end of the lesson, the teacher shared with me her concern for these children who found even a preprimer difficult to read. And then, by way of consolation, she told me that they all knew what a schwa was. Since that time, I have often wondered how these children came to know of "schwas" when they could not read, and how I learned to read without ever coming to know of "schwas." This paper explores one possible interpretation of this paradox.

In the early 1970s, a generally accepted definition of reading seemed to be that it was *the meaningful interpretation of written or printed symbols*. At that time, researchers in reading moved away from curriculum research which compared methods in the teaching of reading to theory-based research which focused upon the process of reading (Gibson and Levin 1975). The emphasis in the field was upon the discovery of the underlying cognitive processes of reading behavior as researchers struggled for recognition of their work as a legitimate scientific endeavor. Reading had become a complicated psycholinguistic process, a solitary effort which took place somewhere between the reader and the text. In turn, learning to read in schools became a series of diagnostic events as the findings of theory-based research were linked with the criterion referenced testing movement of the 1970s and the decade's strong desire for accountability.

154

While researchers in the reading field worked in the 1970s to establish their science, others were pursuing another course. This is reflected in the book *Foundations in Sociolinguistics* by Dell Hymes. Hymes argued that:

> One cannot take linguistic form, a given code, or even speech itself, as a limiting frame of reference. One must take as context a community, or network of persons, investigating its communicative activities as a whole, so that any use of channel or code takes its place as part of the resources upon which the members draw. (1974, p. 4)

Later, in 1977, John Swzed, in his classic paper "The Ethnography of Literacy," brought together the contentions of Hymes with the work taking place in the reading field by stating that:

> It is entirely possible that teachers are able to teach reading and writing as abstract skills, but do not know what reading and writing are for in the lives and futures of their students. (p. 3)

In other words, we have created learning environments for children in which reading and writing are presented as decontextualized language skills which have very little to do with reading and writing in everyday life. But worst of all, we know very little of the social uses and meanings of print in the lives of the children that we study and teach.

Swzed talked of literacy configurations, of literacy cycles, and of reading and writing as complex abilities which are highly dependent upon the social contexts in which people live. And he urged researchers to take a step back so that they could take a closer look at the *social* meaning of literacy. Swzed emphasized that we need to know more of:

1. the roles these abilities play in social life;
2. the varieties of reading and writing available for choice;
3. the contexts for their performance; and
4. the manner in which they are tested not by experts, but by ordinary people in ordinary activities.

Shirley Brice Heath was among the first to follow Swzed's lead. She conducted an ethnographic study of the literacy behaviors of families living in an all black working class community. Heath found that "the children *read to learn* information that they judged necessary in the lives," and that even the "preschoolers were able to read many types of information available in their environment" (1980, p. 127).

Heath identified seven types of literacy use within the community that she studied. These she describes as: 1) instrumental, 2) socio-interactional, 3) news-related, 4) memory-supportive, 5) substitutes for oral messages, 6) provision of permanent records, and 7) confirmation. I have some difficulty with Heath's typography which seems to be somewhat overlapping, and a mixture of process (memory-supportive) and content (news-related) "categories." However, I, too, have found these types of literacy use in the research that I have been conducting with middle-class families (Taylor 1982). The families that I have studied used literacy to solve practical problems and to maintain social relationships. They read

newspapers and made lists, they left messages and kept records, and they collected recipes and read instructions.

It should not be inferred from these findings that the families in either of the studies were using print in identical ways, or in radically different ways. The uses of print are complexly patterned and not equally distributed. Particular configurations of use are highly dependent upon the everyday lives of the families in the communities where they live. The working parent may leave many more messages for the child coming home from school than the parent who is at home when the child returns; while the bus driver may read many more traffic signs than the worker who sits on the bus reading the newspaper.

These initial forays into the social contexts of literacy serve to emphasize how much we need to know of the local and distinctive meanings of print if we are to develop programs which enable children to bring their everyday experiences of print into the classroom. At the present time, it is entirely possible for a child to know of schwas, but be unable to read. It is also possible for a child to be a non-reader in school while using print for some significant purpose in life. An example of this dilemma was related to me recently by a mother whose son was upset when he found that he could not read in school. This first grader had been writing letters, reading road signs, collecting coupons and finding products when food shopping for many months. Pete used to think of himself as "a reader." But when he was in first grade, he was angry with his mother for not teaching him how to read. When his mother asked him what he meant by reading, he said, "You do it in groups!"

Somehow we need to bridge the gap between home and school so that reading in the one is reading in the other. Although helpful, Heath's work is not designed for classroom practice, which leaves us wondering how we can bring together these two disparate worlds of childhood. One opportunity to make the quantum leap is suggested by Don Holdaway. He uses the sociolinguistic research of Michael Halliday to bring the functions and uses of print into the classroom. Holdaway summarizes Halliday's (1974) categories as follows:

Instrumental	The 'I want' function	Fulfilling needs
Regulatory	The 'Don't do that' function	Controlling
Interactional	The 'I love you' function	Relating to others
Personal	The 'This is me' function	Defining self
Heuristic	The 'What's that?' function	Finding out
Imaginative	The 'Let's pretend' function	Making-believe
Representational	The 'This is how it is' function	Communicating about content (1979, p. 148)

Taking the sharing of stories as a cornerstone, Holdaway builds a multifunctional literacy program that translates everyday uses of print into workable classroom practices. But, while critical of present practices, he does not disregard the extraordinary advances that were made during the 1970s. His book is, in many ways, an interpretation of the decade as seen through the eyes of a creative and imaginative teacher who is sensitive to the need within the reading field for researchers to examine "the meaning of meaning" in the definition of reading as *the meaningful interpretation of written or printed symbols*. It is within this context that Holdaway brings Halliday's multifunctional view of meaning to the development of literacy skills and values. Halliday writes:

> For the child, all language is doing something; in other words it is meaning. It has meaning in a very broad sense, including here a range of functions which the adult does not normally think of as meaningful, such as the personal and the interactional. . . . But it is precisely in relation to the child's conception of language that it is most vital for us to redefine our notion of meaning; not restricting it to the narrow limits of representational meaning (that is, 'content') *but including within it all the functions that language has a purposive, non-random, contextualized activity* (1974, pp. 17-18).

We, too, need to redefine our notion of meaning to include within it all the functions that literacy has "as a purposive, non-random, contextualized activity." To do so, we must reach out into the communities where we teach and bring the functions and uses of print into our classrooms. Billboards and flyers, letters and newspapers, price tags and street signs all have a place in classrooms littered with the print and paper of functional literacy programs. If the promise of the 1980s is fulfilled, the culturally remote decontextualized pedagogical strategies, which leave children knowledge of schwas but unable to read, will fade as children learn of the skills of reading within the meaningful contexts of their everyday lives.

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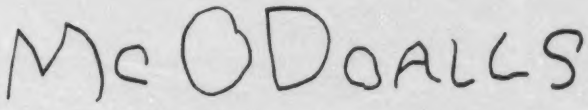
Kenneth Goodman
Yetta Goodman

Reading and Writing Relationships: Pragmatic Functions

Reading and writing are part of the world of children, but not in equal proportions. Children growing into literacy find people around them reading more often than they write and for more purposes. There is a world of already existing written language, including, but not confined to, books. Children see adults reading more often than they write and for more obvious purposes. Adults call the attention of children to print and invite their participation in reading. Such reading does not require the reader to assume the role of writer.

Fortunately children do play at what grown-ups do. They play at creating the aspects of their world which attract them. One function of written language which children seem to internalize in this way is labeling, perhaps their earliest attempt at writing for a general audience. Their names become part of their identity and then a way of personalizing their possessions, their rooms, their products. Logos are among the most attractive forms of print young readers encounter and one of the first forms they find meaning for. These show up in their drawings and in their attempts to create labels for their own environment. The following example accompanied a kindergartener's drawing of her favorite eating place.



One minor mystery of writing development has been why children almost universally begin writing even their own names with capital letters. It seems most likely that this reflects the influence of signs surrounding them which also have a

labeling function. Children use the letter forms that they attend to in these attractive environmental labels.

This demonstrates two important influences of reading on writing. One is that children use in writing what they observe in reading. But they also must be reading like writers. They may notice characteristics of print in their environment, but it is only when they try to create written language that this observation focuses on how form serves function.

Here are some key points about the interrelationships of reading and writing from the point of view of development:

1. While both oral and written language are transactional processes in which communication between a language producer and a language receiver takes place, the interpersonal aspects of oral language are more pervasively evident than those of written language. Productive and receptive roles are much more interchangeable in a speech act of oral language than in a literacy event of written language. The contribution of listening development to speaking development is easier to identify than the similar contribution of reading to writing. One reason is that oral interaction is more easily observable than written.
2. Both reading and writing develop in relation to their specific functions and use. Again there is greater parity for functions and needs of listening and speaking than for reading and writing.
3. Most people need to read a lot more often in their daily lives than they need to write. Simply, that means they get a lot less practice in writing than reading.
4. Readers certainly must build a sense of the forms, conventions, styles, and cultural constraints of written texts as they become more proficient and flexible readers. But there is no assurance that this will carry over into writing unless they are motivated to produce themselves, as writers, similar types of texts.
5. Readers have some way of judging their effectiveness immediately. They know whether they are making sense of what they are reading. Writers must depend on feedback and response from potential readers which is often quite delayed. They may of course be their own readers, in fact it's impossible to write without reading.
6. Readers need not write during reading. But writers must read and reread during writing, particularly as texts get longer and their purposes get more complex. Furthermore, the process of writing must result in a text which is comprehensible for the intended audience. That requires that it be relatively complete, that ideas be well presented, and that appropriate forms, styles, and conventions be used. As writing proficiency improves through functional communicative use, there will certainly be a pay-off to reading since all of the schemata for predicting texts in reading are essentially the same as those used in constructing texts during writing.
7. Reading and writing do have an impact on each other, but the relationships are not simple and isomorphic. The impact on development must be seen as involving the function of reading or writing and the specific process in which reading and writing are used to perform those functions.

Basically, written language came about as a means of communicating beyond face to face situations over time or space or both. In most types of literacy events, writer and reader are not involved at the same time. Young readers may be only dimly aware, if at all, of an author's involvement. Most traditional school language arts programs do not help students to develop a personal functional need for being authors themselves of poems, stories, news reports, books, essays, or biographical

sketches. As they progress in school they will encounter school tasks which require writing. But, too often, the purpose of such tasks from the writer's point of view is to satisfy an external demand and not an internal expressive or communicative need. Furthermore, teachers have tended to be evaluators rather than audience or respondents. Often school writing assignments involve either imaginary audiences or no explicit audience at all.

In summary then, people not only learn to read by reading and write by writing but they also learn to read by writing and write by reading. For the teacher trying to support written language development the key objective is to keep the pupils actively involved in both processes. A successful writing curriculum will be one that builds on personal writing, builds the functions of interpersonal writing, and helps pupils to find frequent real purposes for such writing with real audiences. A successful reading curriculum involves pupils in an awareness of the role of the author.

The Shopping List as a Writing Task

Consider a very mundane use of writing, the composition of a shopping list. The function of such a writing activity seems self-evident. It obviously is to create a guide in advance of a forthcoming shopping trip. But why is it needed? Is it possible to shop without a list? Of course, and most people do shop without one—at least sometimes. So why do people write them? Think about the following reasons:

1. To be sure to get what is needed.
2. To save time in shopping.
3. To avoid impulse buying.
4. To economize on expense through advance planning.
5. To guide a shopper who is not the person making up the list.
6. To follow a personal, familial, or cultural custom.

These reasons are not exhaustive and of course they may overlap and interact. Furthermore, shopping list writing may relate to other preceding or concurrent activities. The writer may first plan and write out a week's menus. Perhaps the list is related to the preparation of a particular recipe or special meal and the shopping trip is basically to obtain the needed ingredients. Or the shopper may scan the newspaper ads for special offers and bargains.

Custom often plays an important role in such an activity. People may continue a custom that their parents engaged in. So today's shopping list to take to the supermarket may be a descendent of the shopping order a prior generation handed to the corner grocer who stacked the items on a counter for the customer.

Making a shopping list may also relate to a broader personal way of organizing one's life. Some people feel more secure when aspects of their lives are planned, organized, and recorded in a visible and consultable form. Writing a list finalizes and formalizes a series of decisions made prior to shopping and assures they will not be forgotten, so it extends memory. The written record gives the writer a sense of being in control.

Why the shopping list is written also helps to determine its form. Of course, its general form as a list comes from the way it is used. The reader may scan it, but

its main reading is done one item at a time to be checked off physically or mentally as it is used. The price per item may be added during the shopping in order to keep a tally of the expenditures. The list may be randomly ordered as items come to the mind of the writer. It may be systematically organized by categories such as meat, fresh fruit, and vegetables. It may be organized according to the writer's memory of the layout of the store to ease shopping and save time. It may list generic items or specific brand names and sizes, such as those on sale.

Even what it is written on and how it is written are partly related to function and use, and partly to personal characteristics of the user. It may be scrawled hurriedly on the back of a used envelope, or carefully typed on a fresh sheet of paper. It could even be checked off on a printed form for such lists with space left for personal items to be added.

Often the readers of shopping lists are also the writers; people write them to use later in their shopping. But sometimes the shopping list is written by one person to be read later by another who actually does the shopping. That makes a big difference. If the list-maker does the shopping too, then the entries on the list need only be complete enough to jog the writer's memory. But if the reader is another person then a lot more information must be included like size, brand, type, or purpose. Even so the shopper may surprise or disappoint the list-maker because important information was not explicit or because the writer made unwarranted presuppositions about knowledge the reader would bring to the task of comprehending and using the list.

We've chosen this rather special kind of reading and writing as a focus of our discussion of the relationships between reading and writing because it is one in which purpose and function are relatively easy to see, form is relatively constrained, and success or failure would be easy to judge. Careful examination of the composition of a shopping list can make clear how writer and reader relate in all kinds of written language. List-making as a kind of writing has many things in common with every type of writing:

1. Its purpose and function are usually related to communication over time and/or distance.
2. It occurs in a specific context in which the purpose or function motivates a specific writing event.
3. It has an intended audience of one or more readers.
4. Its content is relevant to the purpose and audience.
5. Its structure and format are suited to the purpose and function which will be familiar to or expected by the reader.
6. It must be so composed that it serves both the writer and the reader.

Writing shopping lists differs from other kinds of writing in that there is usually only one intended reader who is often the writer. Writing for oneself represents one end of an audience continuum. At the opposite end is writing for a totally unknown audience. Actually it would be rare indeed if a writer had no sense of the audience since he or she would, more or less consciously, have some intentions of reaching particular people or particular kinds of people. Furthermore, the content would itself help to define the potential readers. But it is not uncommon for writers to write for strangers with little personal knowledge of their backgrounds or interests.

As we suggested above, what goes in a shopping list the writer will read later while shopping need not be very complete. But writing even a shopping list for someone else to use requires a sense of audience.

A Full School Program for Reading and Writing Development

An effective school program for building both reading and writing needs to carefully consider the characteristics of literacy events in which people participate as readers and writers. Such a program needs to be built on the full range of personal uses of written language so that literacy may develop in the context of natural, functional use.

Using mundane functions of writing like shopping lists in the classroom can be helpful because all members of a literate community participate widely in the pragmatic functions of reading and writing which Michael Halliday (1975) has called the "goods and services" function of language. These are the functions of written language which help us go about the business of our daily lives—reading bus schedules, writing notes to tell family members where we are, jotting down doctor's appointments and birthdays. Children are often involved in these literacy events. In such literacy events the relationships between reader and writer are very explicit. Reader and author are more likely to be in close contact. Reading what is written is more immediate and feedback faster. Yet, too often, parents, teachers, and children themselves do not recognize these activities as legitimate reading and writing. Therefore, children are not helped to realize that they are already reading and writing, building knowledge about written language, including its various functions and forms. If children can be helped to believe they already do read and write, then school instruction does not become such a foreboding task.

As we focus on the practical functions of reading and writing, we do not minimize the significance of a language arts curriculum rich in children's literature and including recreational and informational reading as well as newspapers, magazines, and other kinds of published materials. Nor do we minimize creative and expressive composition. We want to put all of the uses of reading and writing in a complete curricular context that legitimatizes the practical functions of reading and writing. We want to suggest a full developmental literacy curriculum that parallels the full development of oral language.

Building on Personal Uses of Written Language

The shopping list is one of a small number of relatively frequent writing activities that writers engage in with themselves as intended audience. Other activities in which writers are their own intended audience are: 1) Other kinds of list-making such as things to do, invitation lists, Christmas lists; 2) Information jotting such as names, phone numbers, addresses, odd bits of information, personal histories; and 3) Note taking such as during lectures and interviews or while reading or observing.

All of these writing activities have purposes which are personal, involving use of writing as a means of extending memory. Because this type of writing happens

very frequently, young children see its use and develop awareness of its function quite early.

Children can be involved in making or reading lists in the classroom. Teachers may need to work with children for a while but soon they will be able to do most of the activities themselves as well as to pass on the knowledge and procedures to their peers. List-making might include: attendance taking; keeping track of which children go where during the day; grouping for centers and activities; keeping track of addresses, phones, school personnel, and birthdays; cataloging the class library; preparing lists of educational places to go after school and on weekends to send home monthly to parents; and listing children's completed assignments and accomplishments. All of these tasks eventually lead to a need for organizing, categorizing, and alphabetizing in order to involve children with a functional and personal use of written language.

Another type of personal writing is the diary, log, or journal. It differs from the other personal writing in that it is intended to be kept longer and is usually much more complete than less formal personal writing. Often, a diary takes the form of a written conversation with an imagined alter ego, sometimes addressed as "Dear Diary." It has the very personal function of recording not only events but feelings, longings, and imagined events. As it is used by teens and pre-teens it comes after other writing functions and forms have developed and shows the historical function writing can have by making possible later recall and reconsideration of the past. Like less formal personal writing it represents an extension of memory.

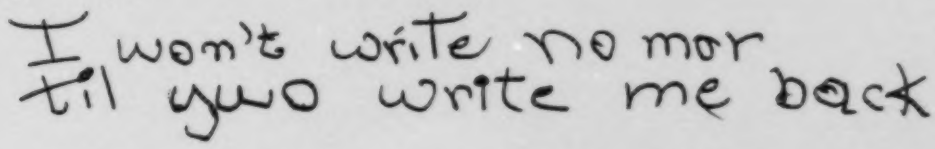
Teachers might capitalize on this kind of memory extension by keeping a group classroom diary to remember important classroom events. Through this experience children can be involved in jotting down information in short partial sentences for further reference. These could later be used to write a classroom letter to parents about "What I learned this week." They could also become part of a classroom newspaper.

This type of diary writing is different from the journal writing teachers encourage young children to engage in, particularly if the teachers read and respond to the pupils' entries. Those become extended written interactions. The teacher's goal may be to create a meaningful purpose for the children to write frequently so that they may have practice in using writing to communicate. The pupils use their writing to tell the teacher about their feelings, the events of their lives, and to complain or make requests. The writing does not have the immediate purpose of extending memory, nor is it personal in that the audience is not intended to be the writer. The children may enjoy reading what they have written but they are not their own intended audience.

Teachers may have begun to make extended use of school journals because they have become aware that while the personal writing children do builds a strong sense of function, it does not involve the child in the role-switching characteristic of most uses of oral language. So the writer does not have the opportunity to receive feedback from a reader and to build a sense of audience. The teacher-response journal is a kind of written language transaction in which some kind of attention to the interests, characteristics, and background of an expected audience is involved.

Teacher response journals have most recently been discussed by Milz (1980)

and Staton (1980). Teachers must understand the importance of the response and must set aside time to read and respond to the journals on a regular basis. The importance of this is seen in a second grader's disappointed note to his teacher found in his journal:



Other kinds of personal reading and writing can be highlighted. The classroom can be even more of a literate environment than a supermarket, a home, or a gas station. Teachers can make the classroom a literate place in which children KNOW that they are constantly involved in reading and writing.

With function in mind, centers or special areas of the room where specific work takes place may be labeled. Restrictions related to the use of these areas may also be developed and written by the children so they know what is expected of them. Instructions about how to care for plants and animals or warnings about unsafe areas in or near the school may be composed by the children. This might emerge from a unit on animal or plant care or safety. Warning signs on drug containers, household cleaners, and so on can be used to focus on the significance and utility of such warnings and the problems in understanding their meanings.

Children can personalize their belongings, their areas of control, and their work. Mail boxes and cubbies can be labeled. If they have their own work areas such as a desk or table, these may also be labeled by the children. Children can be designated as mail carriers or box stuffers so that the labeling becomes functional in the classroom, as everyone has to learn to read all the labels in the room for some real purpose.

A unit on language or on different countries might involve learning how the children's names might be written in other languages or in other language forms such as calligraphy. Children could change their labels during the year depending on what is being studied in order to maintain interest in the activity.

When children are involved in role-playing situations, whether it is playing house or gas station in kindergarten or interviewing famous people as part of a social studies unit in upper grades, the implements and materials necessary for reading and writing should be readily available so they can easily make shopping lists, label the costs of items, write out receipts, or take notes as appropriate to the activity. These might include typewriters and calculators as well as paper, pencils, and markers.

In personal writing the writer may find out later, as a reader, how successful the writing has been and what changes are necessary to make the writing better serve its purpose. But there is not the same awareness of audience that emerges from a reader's response when the shopping list has a reader other than the writer. It is only when language is interpersonal that the writer can build a sense of how completely a message must be represented and how form must support function. Language is both personal and social, but it is its social inter-personal use which

makes the user aware of how well or completely and in what form it must be expressed to be successful.

Microcomputers have recently made possible a new form of written conversation. To some extent children can hold conversations using computers with "user friendly" programs. Many owners of home computers "talk" to other computer owners through their keyboards. Some experimental use of such electronic writing has occurred in several school settings (Scollon 1982). Especially in remote communities microcomputers make writing a more immediate experience by minimizing the time of getting responses to messages. Such written conversations involve readers and writers in the role switching characteristic of oral conversation and provide immediate response to each utterance. Deaf and hearing impaired people have been using teletype telephones for some time in place of the usual phones, which are not very functional for them.

"Written conversations" are especially helpful for middle grade children who may need help to focus on interpersonal writing. It is literally a conversation on paper usually between two people initially including the teacher. But as the activity becomes familiar to children either the teacher's role can be taken by another child or a third member may be added to the team. For very young beginners or insecure writers, the teacher may read aloud as the message is being penned. An example of written conversation in the third grade follows:

Teacher: Pedro, how are you today?
Student: Fine how are you today?
Teacher: I feel great today. Pedro, do you have any hobbies?
Student: No. Do you?
Teacher: Yes, Pedro. I like to cook, and I like to swim. Mrs. Wendt told me you play kickball. Is that right?
Student: Yes.
Teacher: Do you like it?
Student: Yes. Do you like it too?
Teacher: Yes, I like it a lot. Are you on a team?
Student: Yes I am on bobcat. Do you like the team?
Teacher: I have never seen the bobcat play.
Student: Why don't you come and see?
Teacher: Thanks! I would like to!

But this form of written dialogue, while very useful, does not yet represent a common need in our culture. Ironically, there are not many common writing situations in which there is some kind of parity between the number of readers and writers involved.

Note and letter writing is one type of writing that most often involves a single writer with one or a small number of readers. Furthermore, this is another type of writing which children observe adults using. They also have early experiences with receiving cards, notes, and letters. So children build an early sense of the function of letter/note writing. Their early efforts are usually successful and well received because the recipients of children's notes and letters are often close relatives and friends who are willing and able to extend themselves to comprehend and respond. The more in common reader and writer have the less the writer needs to consider audience needs, the more the reader may infer, and the less complete the expression needs to be. That creates an optimal situation for language learning.

Note and letter writers learn form and purpose from receiving and reading or hearing them read and quickly adapt form to function as they write. Setting up a class or school post office has its own payoff as children develop many opportunities and reasons to send and receive messages (Cholewinski 1982; Green 1983).

Writing letters to less familiar people than classmates, teachers, and family members provides new audiences for children. Writing to a favorite author to express approval, to a company for free and inexpensive materials, to find answers to questions raised in a science or math unit, to the President, or to the editor of the local newspaper to echo agreement or disagreement with some significant policy all provide challenges for writing which often demand shifts in style and conventions.

Although the children often have the opportunity to read responses, they may also discover that important people do not always answer their mail. Paulie, a third grader got a form postcard in answer to his plea:

Dear Mr. President,

Please help Detroit.
Do not let people carry guns.
We see you on T.V.
Our neighborhood is dirty There
is junk everywhere The windows
are busted out Please don't let
people bust out the windows.

Please make alot of hpuses
pretty. Not with holes, filth,
and bugs, and rats. Please
let butterflies be flying on
your hand.

Paulie

If all involved in literacy development can understand the strengths children have when they come to school, if they believe children have already started to read and write as they have actively participated in their literate environment, a curriculum will be developed which expands on children's knowledge. This kind of understanding is a much more supportive basis for learning than is ignoring the degree to which children come to school understanding the nature of written language.

We suggest examining the wide variety of functional writing experiences which can be turned into daily curricular experiences. Teachers can write down everything they write or read for a forty-eight hour period. The children can be asked to add to this list by observing and interviewing family members. A Friday

and Saturday or Sunday and Monday are good days to choose since these include a school day and a week-end day which will expose different kinds of language functions in at least two different settings. Everything that is even scanned or glanced at quickly, such as toothpaste containers or recipes should be included. Then the teacher can sit down with the list and ask: "How can I turn each activity into a written language experience for the children in my classroom?" or "How can I relate these things to the studies I am already planning for my class?" The writing experiences can be planned so that they are done by the children alone or they can be a collaborative effort by the teacher with the children.

Many of the activities will involve both reading and writing which take place almost simultaneously. Many of the activities which begin as personal writing will become interpersonal as children expand their focus on self to a focus on communication with others.

All of these activities take time. They should not be started in a school or classroom unless teachers understand their significance, are enthusiastic about what they accomplish, and believe in the priority of such activities. If these are simply added to an already overcrowded curriculum, then both teachers and children become frustrated and the activities lose their significance. Since these activities involve the functional use of reading and writing, they include spelling, handwriting, dictionary use, and language analysis. The teacher should therefore spend less time focusing on the latter in workbooks and ditto sheets which isolate their development from use. Instead the teacher can begin to gather evidence through their daily use of reading and writing for many purposes and in all kinds of settings that children's spelling, handwriting, and grammar develop significantly through varied language use.

Through engaging in a large amount of varied reading and writing, children will develop a sense of control over them and will find a personal significance for becoming literate. Focusing on activities where reading and writing take place almost simultaneously helps children realize that one process supports the other and that they are capable of controlling them both.

We believe that development in reading and writing can only occur if people actively participate in reading and writing experiences which have significant and personal meaning for the user.

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Reading, Writing, and Language: Young Children Solving the Written Language Puzzle

When young children wish to join the play of a group of their peers, they may blend into the ongoing game by adopting the behaviors they are observing; that is, they do what everyone else is doing (Corsaro 1979). Young children ease themselves into literacy in a similar manner. They do as they observe others doing. They may pick up a book and begin to read by "talking like a book" (Clay 1979). They may put pen to paper and begin to write by making letter-like marks on the page, perhaps assuming that the paper contains a message which adults can read (Clay 1975).

Such early reading and writing behaviors indicate young children's awareness that talk and print are related—one somehow derives talk from print and print from talk. But they demonstrate as well that the precise nature of the connection is not understood. Young children's comments as they read and write often reflect the puzzle that written language presents for them:

> Sance (age 5): Guess what this spells? (Sance has written *Loeed*.)
> Dyson: What does it spell?
> Sance: You gotta' guess it.
> Dyson: 'kay. "Lo-eed."
> Sance: Huh?
> Dyson: "Loeed."
> Sance: (with surprise) That's not my dog's name.

In this paper I focus on young children, from approximately ages four to seven years, who are confronting the written language puzzle. I first review briefly the literature which seeks to define the characteristics of this puzzle. Then I place the task of learning about written language within the context of the nature of the learning process itself. Finally, I focus specifically on young children's early writing. I

argue that writing may be particularly valuable in helping young children a) to make explicit their current hypotheses about the written language symbol system and, as a direct result of that process, to make their ideas explicit, and b) to revise those hypotheses. I illustrate that, in attempting to read their own writing, both independently and in interaction with peers and adults, children may discover the nature of the precise connection between reading, writing, and language.

The Complexity of the Written Language Puzzle

Until very recently, the task of learning about written language was described quite simply: children must first learn that print is "talk written down" (e.g., Britton 1970). Within the past decade our conception of the written language puzzle has changed dramatically. Acquiring written language has assumed all the complexity and intrigue of the acquisition of oral language. For coming to understand the written language symbol system appears to involve learning at several levels all at once. Combining the varying perspectives of the literature on early literacy, we, as readers, can synthesize a picture of a child uncovering written language's:

1. perceptual features: what it looks like (e.g., Clay 1975);
2. symbolic nature: the relationship between print and the formal aspects of speech (e.g., Ferreiro 1978, 1980);
3. structural characteristics: the conventions that determine how connected discourse is put together, as in the structural features of stories (e.g., Applebee 1978) or the cohesive features that link sentences to form texts (e.g., King and Rentel 1981);
4. discursive procedures: the processes through which a dynamic experience is transformed into an explicit, ordered, and linear format (e.g., Cook-Gumperz and Gumperz 1981) and, conversely, by which a linear display is transformed, through both graphic and language cues, into an understood experience (e.g., Clay 1979);
5. sociocognitive nature: how meaning conveyed in print relates to the knowledge of both the writer and the reader; that is, that sustained written language, to a greater degree than conversational oral language, must be interpreted independently from the context of a specific or personal situation (e.g., Cook-Gumperz and Gumperz 1981; Donaldson 1978; Wells 1981); and
6. functional capacities: the uses of written language (e.g., Goodman 1980).

Children can begin to explore these aspects of written language through the oral medium. For example, children gain information about written language's structural features through listening to and retelling stories. In this way, they may also explore the discursive nature of written language. For instance, Cook-Gumperz and Gumperz (1981) suggest that, through the use of *ly* words, picture books demonstrate how one puts into words (or retrieves from text) nonlexical information such as that conveyed by tone of voice (e.g., "Open the door," the girl said loudly).

Similarly, young children experiment with many of the functions of written language in their dramatic play as they, for example, make "shopping lists" and write out "checks" (Schickedanz 1980). Through the use of oral language and "pretend" writing, they create the written language event.

Yet, to engage in conventional written language processes themselves, children must understand the inner workings of the written language system. They must discover, to build on Smith's (1981) conception of the writing process, that the writer's intentions are expressed through specifically arranged symbols, that these symbols are related in arbitrary but precise ways to formal characteristics of speech, and that the reader can receive the message only when it is encoded in such specifically chosen symbols. To participate in the literate world, children must understand this precise connection between reading, writing, and language.

How can such a connection be discovered? Activities, including those mentioned previously, which take place primarily through the child's use of the oral medium (e.g., being read to, dictating messages) may not be sufficient. While indisputably valuable aspects of the early literacy experience, these activities do not necessarily confront children directly with the written language puzzle or, more specifically, with the reading, writing, and language connection. As illustrated in the next section, in order to solve any cognitive puzzle, children must be actively and directly engaged with the problem.

The Child as Problem-Solver

From the point of view of cognitive learning theory, children have a strong desire to master their environment (as do all human beings). They select, interpret, and integrate information about the world in order to form a working model of that world. On the basis of their models, they make predictions about how the world works and, when those predictions do not work out, they attempt to solve the puzzlement. Puzzlements, then, cause human cognitive processing to operate with persistence and at maximum intensity. Flavell (1977, p. 30) explains that, when faced with novel, unanticipated, puzzling events, "ongoing activities get temporarily suspended, the child becomes somewhat tense and aroused, and a variety of attentional, curiosity, exploratory, and other information-seeking behaviors are likely to ensue."

The notion of learning through puzzlements implies that simply being exposed to information is not enough. As Markman (1979) illustrates, we may not even realize that we don't understand if we have not acted upon—processed—the incoming data sufficiently. This is why, explains Markman, we learn so much when we teach. As we carefully organize and make explicit our own understandings, we confront gaps in knowledge and contradictory information. Our confusion leads to valuable question-asking and reprocessing of information. To learn, then, we must grapple with, interact with, data, and we must reflect upon that data.

In their oral interactions, young children use their implicit knowledge of language relatively unreflectively, focusing their attention on the real world surrounding them. Language is for them "a rich and adaptable instrument for the realization of their intentions" (Halliday 1973, p. 2). To become literate, the child must focus

on and analyze language itself (Donaldson 1978; Vygotsky 1978): the tool must become an object of reflection. In the next section, I argue that the slow process of writing is ideally suited for reflecting upon the nature of written language.

Writing: Organizing One's Thinking; Confronting Confusions

> "Is this a word, Mom?" asked five-year-old Chad.
> "No, that's not a word, Chad."
> "Well, when's it gonna' be a word, Mom? And another thing, if it's a bad word, are you gonna' get mad at me?"

In this anecdote, shared with me by Chad's mother, we see a young child focusing on the outside of the writing/reading processes; words were written in letters and now they are to be read. In writing, then, children confront their essential problem—how meaning is conveyed through, and retrieved from, the print. Thus, the focus of young children's struggle with writing is different from that of more proficient writers. For example, whereas I am searching for the words to clarify my ideas, young children search for the procedures for encoding meaning on paper. They grapple with the question of how written language works. (For a discussion of children's changing focus in learning to write, see Graves 1982.)

The contribution of independent writing to written language development has been noted by several authors. Stine (1980), Clark (1976), and Durkin (1966) all suggest that early writing is valuable simply as an initial starting point for gaining an interest in written language. Stine, who studied the early literacy behaviors of preschoolers, found writing to be the most popular "beginning reading activity." She reported that children appeared to initially explore writing by making letter-like forms. From there, they moved to an interest in searching for the correct letters to write special words, particularly names; this "searching" was effected through copying print in the environment and through frequent question-asking. The behaviors described by Stine are similar to those detailed by Dyson (in press) in her participant observation study of kindergarteners' spontaneous writing behaviors. They also complement the findings of Durkin's (1966) and Clark's (1976) ex post facto studies of children who read and write in a conventional manner before school entry. Both Durkin and Clark reported that young readers were, to use Durkin's phrase, "paper and pencil kids"; that is, they "scribbled," copied letters of the alphabet, and requested and wrote the names of family members and friends.

Several authors have discussed in greater detail the value of early writing for literacy development. Clay (1975) has focused primarily on children's earliest exploring of the perceptual features of print. She emphasizes that, in writing, children's attention is directed to the visual details of print, thus providing a valuable complement to early reading. To elaborate, children beginning to read tend to rely primarily on language cues—their sensitivity to and memory for language; for example, they "read" familiar picture books by recalling the way the book "sounds." In writing, children must develop strategies for attending to visual cues—particular arrangements of specific graphic forms. Thus, through their earliest writing, children refine their "perceptual awareness of those arbitrary customs used in written language" (p. 2); for example, children discover the recursive nature

of print (i.e., that the same basic forms recur repeatedly) and the linear direction of that print.

Chomsky (1979) also stresses the value of early writing, although she is primarily concerned with children's inventions of their own spellings. She sees spelling as a way for children to become confidently and actively involved in the task of becoming literate; she also views inventing spellings as valuable practice in phonetics, word analysis and synthesis, and letter-sound correspondences: "If the children have sufficient metalinguistic awareness to permit the segmentation of words into phonemic components, and a knowledge of letter names or letter sounds, they can go ahead" and invent spellings (p. 47).

Ferreiro's (1978, 1980) work emphasizes the value of early writing for precisely those children who do *not* have the kind of metalinguistic awareness discussed by Chomsky. It is far from clear how children's conceptions of the symbolization process of writing change over time, but clearly they do not leap from the gross exploring of the writing process described by Clay (1975), in which children invent "messages" which have no apparent relationship to the written graphics, to inventing alphabetic spellings. Ferreiro (1980) has suggested that, through their early writing, children gradually uncover the nature of the relationship between oral messages and graphic symbols. Using Piagetian methods, Ferreiro conducted a longitudinal study of thirty children between the ages of three and six in Mexico City. She found that, regardless of social class, children initially hypothesized a concrete relationship between graphic features and their referents, that is, a relationship which is not mediated by oral utterances. During this early stage, the children believed that only referents for concrete entities are actually written in a written sentence, although one reads the "complete" sentence. At a later point in development, the children's writing behavior reflected an understanding that a relationship existed between print and the formal characteristics of oral language.

If we accept that young children must refine their understanding of the connection between reading, writing, and language, the act of writing—however the child goes about it—should be helpful. In attempting to independently create a message, children must organize and put into action their conceptions of writing. In attempting to read or to have others read their writing, they must face the inevitable contradictions between what they thought they were doing and what they in fact did. As Ferreiro (1980) explains, conflicts occur spontaneously when children write and then try to read what's been written. The combined processes of writing and reading centered on child-organized and created text may contribute significantly to an awareness of the written language system.

Illustrations from Observations of Young Children

In this section, I wish to illustrate the potential contribution of early writing to children's awareness of the nature of written language. All of the children discussed here have grasped many basic concepts about print (Clay 1979); for example, they are aware that print carries a message and that it consists of linear patterns of particular letter forms. They are beginning to "tackle the written language system" (McKenzie 1977, p. 317), that is, to analyze the significant details of print which

allow meanings and written language to be linked. It is not possible to organize the illustrations in a precise developmental order; children appear to learn about all levels of the written language system (letters, words, sentences) at the same time (Clay 1975). However, the first illustrations will center on young children attempting to write names, a typical focus of their first efforts at conventional written language (Clark 1976; Durkin 1966; Stine 1980). Then I will focus on young children attempting to write sentence-length, conventionally-written messages. Finally, I will describe illustrations of children's curiosity regarding the nature of the symbol system itself.

I begin, then, with excerpts from the conversations of kindergarteners writing and reading names together:

> A group of six children is sitting at a round table equipped with paper, pencils, colored markers, and crayons.
>
> Rachel: I've got *Linda, Viviana* . . . (reading peers' names which she has written)
> Courtney: Linda, give me your name.
> Linda: (calling out letters to Courtney) *L-I-N-D-A* . . . On my paper I have *Tracy, Linda, Rachel, Viviana* (pointing to each word as she reads) . . . How do you spell *Danielle*? Hope it's not a long long name. Oh (looking at Danielle's name), it's the same [length] as Courtney's . . .
> Courtney: (whispering to Tracy) You know how to spell *Vivi*?
> Tracy: *V*
> Courtney: I know *V* . . .

All of the children involved in the above conversation could read by inventing a text to go along with a book's pictures; they were, in this sense, on the outer fringes of the written language system. In this modest, child-initiated writing activity, the children were grappling confidently with the inner workings of the written language system. They were spelling specific letters for specific words. In their rereading of their lists of names, they were matching oral words to specific written ones and noting specific similarities and differences between how the words were written. They demanded from each other a careful, correct reading and writing of their name, as illustrated in the following anecdote:

> Alice asked Mark for the spelling of his name. As Mark wrote the letters of his name, Alice made them on her paper in seemingly random order. Mark objected, "No, you hafta' put the *R* next to the *A*, next to the A." Mark had Alice start over three times until, finally, she wrote the entire name correctly.

In the independent reading and writing of the following more advanced writers, we see the opportunities for similar learning regarding how oral messages are related to written (read) text. Unlike the children in the above excerpts, these first graders, all of whom were reading in a preprimer, were attempting to write messages consisting of more than one word. The children drew pictures of their friends and then wrote their messages. In writing their messages, they did not necessarily proceed in a linear way but, rather, often began by writing the words most basic to the meaning they wished to express (similar behavior was reported by MacKay and Thompson 1968). For example, Michael wrote:

> Michael Kelly my friend

But he read it back:

"My friend is Kelly."

Similarly, Becky wrote:

My friend is Kim Josie

But she read:

"My friend is Kim and Josie."

When asked to read and point to each word that they had written, certain children were able, without prompting, to make the needed changes, for example, to rearrange words or to add the needed linking verbs, prepositions, conjunctions, or articles. Others, like Ginny, revealed through their writing and reading that they could not yet effect an exact match between what was written and what was read:

> Ginny asked her teacher, "How do you spell, 'My friend is my brother'?" Her teacher wrote the words for her, putting each word on a separate index card. Ginny copied each one. She then reread her sentence like this:
>
> Text: My friend is my brother.
> ↑ ↑ ↑ ↑ ↑
> Ginny: "My friend my broth er."

Through more experiences with, and interactions with peers and adults about print, Ginny will certainly form a more precise understanding of the relationship between oral and written messages.

Robin was a confident kindergartener who wrote more fluently than any of the previously discussed children. Her writing process provides yet another illustration of a young child grappling with reading, writing, and language. Like many young children (Graves 1975), Robin constantly reread as she wrote, seeking to match her talk and her text:

> Through both requesting words from an available adult and independently producing a few well known words, Robin had written, "I'm want to go to school am when," which, as Robin soon realized, made no sense:
>
> (Robin's rereading) *I'm want to go to, I am—I want to go to school, am, when*—This doesn't make sense.
>
> (Robin rereads again) *I'm want—I—want to go am,* No, *to school* . . . I wish I wrote "When, when am I going to school?"
>
> (Robin rereads the words in a different order) *when I want to go to the* . . . *T-H-E* (writing *the*) . . . There, that'll make sense.
>
> (Robin rereads again) *I'm, I want, I'm want to go to the school with* (misreading *when*) you!
>
> *Y-O-U* (writing you) . . . There (Robin crosses out *am*).

In Robin's struggle, we see the difficulty of holding onto a message, breaking down that message into words, encoding those words, all the while trying to "make sense." Through her efforts, Robin demonstrated again how producing one's own message can bring together the writing and reading processes. In addition, her writing process demonstrates how writing can further the child's use of both the

language (i.e., "This doesn't make sense.") and the graphic cues of written language.

To this point, my illustrations have concerned young children confronting the written language puzzle on the level of words or sentences. But in writing, children may also analyze the inner workings of words; they discover the alphabetic nature of the writing system. I refer again here to Ferreiro's (1980) suggestion that children hypothesize a concrete relationship between written words and their referents. She described children who appeared to hypothesize that the quantity of letters was related to the quantitative variations of the referents (for example, *elephant* should require more letters than *ant*). In her study of kindergarteners' writing, Dyson (1981*a*) documented children's remarks on the length of the words they would copy (e.g., "Oh, that's a long one."). It does not seem unreasonable that, in requesting and copying words, including each other's names, children would eventually be forced to reconsider such an hypothesis.

Certain young children are quite overtly curious regarding the nature of the symbol system. For example, consider the following exchange between Mark, a kindergartener, and an available adult:

Mark: What does this say? (Mark has written *pooth*.)
Adult: Let me see. That says *pooth* . . .
Mark: Well, what if you draw another *o* right here?
Adult: That would be *pootho* . . .
Mark: What if you draw a *h* right here?
Adult: That's a *g*, and that says *poothog*. That much is *hog*.
Mark: *Hog!* I was trying to draw somebody's name.

The next day Mark wrote *neck* and asked:
What does that say?
Adult: *neck*
Mark: What if I put an *o* right here. What does that say?
Adult: *necko*
Mark: It's almost *neckolace* [sic] . . . only you have to put some more. What?

Mark's final comments reflected an understanding that graphic symbols are related to formal characteristics of speech and that what is read depends on precisely what was written.

Young children who are particularly active investigators of written language allow us to witness their independent efforts to make sense of the written language system. Five-year-old Vivi was such a child. In her writing, Vivi combined two procedures for relating oral and written words, both of which have been noted in the literature. Ferreiro (1980) suggested that, when children first begin to look for a relationship between graphics and language, they write one letter per syllable, although, at the same time, they are careful to write a certain number of letters (the minimum being three) so that the word will be "readable." Others (e.g., Chomsky 1979) have suggested that letter names provide children with a first link between oral and written words. Vivi combined both suggested links. She would write the name of any letter she heard in the spoken word or phrase and, in addition, she would add a certain number of letters in order to have a sufficiently lengthy text. For example, she wrote *PNEDN* for "in a minute" (which is pronounced "EN[N] A MEN [N]UT"). Conversely, she also wrote letters, and then, by listening to the

letter names, she decided what word she had written. For example, Vivi wrote the letters *PARA NB*, naming them as she wrote; then she decided that she had written "Debby." Her decoding was as follows:

Text: PARA NB
↑ ↑
Vivi: "Deb by"

Vivi also requested the spellings of words from the more experienced writers who surrounded her. At times the spellings of the requested words conformed to her hypotheses regarding how the written language system worked. For example, in one incident, Vivi wrote *KA* and then asked, "What else? How do you spell *cake*? I already have this [KA]." The given word *cake* conformed perfectly to her current operational rules for writing. Other words, however, were not so cooperative. On one occasion, Vivi named the letters of the word *dog* over and over again to herself, as though trying to figure out how in the world *D-O-G* could be read "dog."

Clearly we need to identify and trace the development of other eager investigators of written language such as Vivi before we will be able to confidently describe progressions in what are apparently prealphabetic writing strategies. Nevertheless, it does not seem speculative to point to the value of Vivi's confident and persistent exploration of the written language process which had, at this point, extended over a two-year period (see Dyson 1981*a*). Like the other young writers I have discussed, Vivi appeared to be making valuable discoveries regarding the nature of written language.

Towards Clarifying Our Own Understanding

In this paper, I have argued that early writing is a vital component of the literacy learning process. Through writing, children may refine their understanding of the written language system. Currently, we know very little about how this refinement takes place, that is, about how children's early strategies for making sense of written language change over time. There may be, as Ferreiro (1980) suggests, definite strategies which all children use. On the other hand, there may be a range of possible developmental strategies. This is a question for careful observers of young children to investigate.

The implication of this paper, though, is not only that we look more closely at early writing. If, as I have suggested, through writing children establish the connection between reading, writing, and language, we must also look more closely at early reading/writing relationships. As we see changes in children's writing strategies, do we see concomitant changes in their reading strategies? Do changes appear to develop in one process before the other? Since young children write differently for different purposes (Dyson 1981*b*), it may be that they read differently in different situations as well. Thus, to answer such questions, we need to view children reading and writing for a variety of purposes in a range of situations.

Answering such questions will require the cooperation of both researchers and teachers. By allowing, indeed, encouraging and delighting in early writing, teachers of young children allow the questions which I have raised in this paper to gain significance. If we are to adopt a truly developmental approach to literacy,

then we, teachers and researchers, will need more detailed descriptions of children's early approaches to literacy so that we will be able to both foster and recognize progress—positive changes in children's behaviors. Further, since these questions can only be measured by observation of children in a range of situations over time, they require the collaborative efforts of teachers, who have sustained, close contact with the children, and researchers who are trained to, not only observe, but to organize, reflect upon, and integrate observations. An excellent model for this type of study is the ETS Collaborative Research on Reading project. In this longitudinal study, researchers and teachers jointly investigated individual children's changing behaviors over time and across a range of classroom contexts (Bussis, Chittenden, and Amarel 1978). Such cooperative efforts of teachers and researchers will allow us insight into children's strategies for making sense of the written language puzzle.

A Final Comment: Allowing Children to Play with the Puzzle

The written language puzzle is a complex one. And, as with most puzzles, children cannot solve it by being given only one piece at a time. To build on Werner's (1948) conception of human development, children must solve it by gradually differentiating its pieces and, at the same time, actively manipulating those pieces within the context of the production of a meaningful whole. In the case of written language, that whole is not a completed picture, but a completed meaning, a message. Through their own actions, children come to realize that the precise arrangement (writing) of the pieces (linguistic/graphic symbols) is necessary if the desired whole (the read message) is to be realized—that is, children establish connections between reading, writing, and language.

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Reading with a Sense of Writer: Writing with a Sense of Reader

The reader and the writer are engaged in an enterprise, not unlike exploration and not unlike inquisition, finding out about their world and themselves. Reading, if it is to be communication, is reading with a sense of writer. And correspondingly, writing, if it is to be communication, is writing with a sense of reader. Does this sense of writer aid the reader in comprehension? And does that sense of reader aid the writer in composition?

Numerous cases have been reported wherein readers, as they glance over assorted texts, novels, and journals, actually find themselves in "alien" territory, not really grasping the author's meaning—missing the point. How can one become a more efficient interpreter of the printed page? And, shifting the spotlight, what shall we say for the writer who produces such cryptic material that the reader weeps—such content-less stuff that the reader sleeps? What is the relationship between the writer's making the point and the reader's getting the point? Could it be that the more skillful we become as writers, the easier our reading will become, and vice versa? As we tackle the task of answering those questions, we consider the reading process, the writing process, the relationship between the two, and implications for the teacher.

Reading Process

Reading is a process of seeking meaning in what has been written, making sense of somebody's utterance. Ribovich (1979) compares children's use of oral language to their use of its written counterpart. Oral language, she notes, "becomes their personal tool as they, instead of studying it, *use* it to *communicate* to a variety of people in a variety of situations for a variety of purposes" (p. 878). She wonders then if

there isn't a need for reading—reading as communication in written form. Indeed, it does appear that children and adults need to actively seek and share information about themselves, the world, and language. DeZwart (1973) concluded that almost all knowledge possessed by children has been gained by "active processes." "Action and interaction with people and things are the sources from which knowledge is acquired."

According to Barnitz (1979), "A fluent reader is a thinking language user. In the reading-communication process, a reader samples information from the text by means of various subsystems of language" (p. 902). These subsystems, the graphophonic, the syntactic, and the schematic systems, provide for the reader "cues" to untangle the message and its meaning—to transform or translate letters, combinations thereof, strings of letter-combinations, and combinations thereof into thoughts . . . and sometimes even into feelings. Those who most efficiently use available cues in grammar and in context are proficient readers. They utilize *all* of their language knowledge, but that doesn't necessitate the continual employment of every cue; that doesn't signify a tedious and laborious process. Rather, as Hittleman has pointed out:

> A proficient reader does not use all of the signals built into the writing system just as a proficient listener does not use every facet of the spoken language. The reader anticipates meaning and has it reconfirmed. The less one's thoughts about the message have to undergo change during reading, and the fewer number of cues from the page one needs for arriving at the author's meaning, the more proficient he is as a reader within that reading situation. (1978, p. 72)

Because the reader's development, construction, and reconstruction of meaning from written language is so dependent upon the original development and construction by the author of that meaning—so neatly related to the whole concept of communicating ideas via graphic symbols—it is reasonable to attend to the matter of writing. Writing is, after all, the means by which "reading material" has come to be.

Writing Process

Writing is the means by which someone transfers his or her mental image—or emotional state—concerning a physical actuality, a great revelation, an inner trauma, an outward experience, a novel idea to someone else in word form, by the vehicle of pen, pencil, or typewriter. An awareness of "literature in the making"—like an awareness of how Beethoven composed his symphonies or Betty Crocker concocted her casseroles—provides a key to deeper understanding of "what's going on"—not to mention a greater appreciation, a keener perception, a richer enjoyment.

Writing is the discovery process à la language. According to Murray (1977), writers use language to unlock meaning. They do not follow a blueprint, but rather find their ideas developing as they express them. Writing is also the communication process à la language—expressing one's discovered meaning to another. Among the many interesting observations made by Murray are these: "The complicated and intertwining processes of perception and conception through language" involve stages, namely "prevision, vision, and revision"—which, like the complex

process wherein they work, are not simple and not rigid. "In actual practice . . . these stages overlap and interact with one another" (pp. 7-9).

In addition to tools such as genre, tone, point of view, voice, etc., writers also have at their disposal certain "patterns" which make "tailoring" of the material easier. As the novice seamstress approaches her carefully selected fabric with visions of dazzling overalls and a matching shirt, perfectly proportioned and positively posh, she asks critical questions: How do I cut the pieces? How do I sew them together? With what kind of stitches? In what order? And so does the writer—he or she approaches carefully selected thought with visions of a dazzling and significant presentation, asking critical questions. Different subjects are handled on different bases; different patterns are composed of different critical questions. These "patterns" which the writer uses as a tool to *develop* meaning are the "patterns" which the reader sees as a tool to *unlock* or *reveal* that meaning.

Relationships

Reading and writing are interdependent processes—necessary to one another and mutually beneficial for one another. Hoskisson states, "Writers will be readers. . . . In fact our best readers are our writers. You know that in order to write, a writer has to have a great deal of information about a subject. In order to get (it) . . . reading must be done." He then compares written language development to oral language development: "When learning the spoken form of the language, children were producing it; they were listening *and* talking . . ." (1979, pp. 892, 893).

The relationship between reading and writing is an alliance based on "communication." Christenson writes: "The writer's guide is his own sense of what the reader must be told . . . we must work to develop that sense. The difference is often the difference between self-expression and communication" (1967, p. 65). Kroll (1978) suggests that the writer inquire: Who is reading? What will interest them? What do they need? What is appropriate? He further suggests that such perspective will help the writer to select and organize information, as well as to eliminate some pervading problems—irrelevant details, unnecessary repetition, omission of transition, and misleading punctuation. Instead of a nebulous expulsion of words from writer to "who knows who"—or a bungled blurt from Ego to Id—the author sends a meaningful message to someone.

Let's consider our own most memorable writing ventures. Most likely they were for a definite audience—a fiery letter to an old flame who fizzled for unsatisfactory reasons, a passionate poem to a new "spark," an announcement of "I'm quitting!" and "Here's why!," a sincere "Thank you" for an unexpected favor, a piteous plea for money . . . and so on. Not only is our purpose clearer with a "sense of reader" but also our language is more precise and more coherent if we write so that our readers can comprehend.

Implications

Children learning the written form of language ought to be producing it as well as reading it. They should be reading *and* writing. They should be aware of someone

reading their writing, and that what they are reading is someone's writing. Thus, implications directed at the teacher are important.

Could the teacher *respond* more, correct less? *Be* an audience? Couldn't the instructor's comments be surmisings on the student's ideas, or requests for clarification, or humorous insights? Could the teacher ask the learners: "Can you convince *ME* . . . ?" "Can you describe yourself to *ME* so that I could pick you out of a mass of human beings?" For example, fellow students could provide an audience: Each student writes a question—something he or she "has always wanted to know but was afraid to ask." The questions are "auctioned off" and answered by fellow students who know the answer or aren't afraid to venture a guess.

Writers who consider their readers may ask: "Is my audience in a state of confusion or bewilderment?" "Given my first three sentences, can my audience predict my fourth? Within each sentence, are my first six words arranged in such a way as to lead my reader to the seventh?" "Am I providing my audience with 'cues'?" These concerns point would-be writers to the important matters of clarity, cohesiveness, transition, and coherence. They reinforce the notion that writers must have a clear idea of where they are headed. What is PREDICTION for the reader must be FORESHADOWING for the writer. What is COMPLETION for the reader must be, on the writer's part, meaningful and logical RESOLUTION.

As teachers of reading, we are teachers of writing. And as teachers of writing, we are . . . teachers of reading. Both are processes involving thinking . . . and seeking . . . and experimenting—action and interaction. Both require time . . . for practicing and for polishing. Students need guidance as they develop their communication skills; they also need convincing. Can we convince them that they are authors writing something worthy of being read? (Can we help them to be?) Can we draw out their best thoughts, enhance their gifts by recognizing and lauding them a little? Can we work at eliminating their weaknesses with helpful suggestions and encouragement, at being enthusiastic about their discoveries and development? Can we convince them that they are readers—discovering "new worlds?" Can we convince them that reading *is* discovering? Finally, can we work as collaborators?

Eating a cookie takes on new dimensions when one is aware of the recipe . . . or the baker. Baking a cookie takes on new significance when one can hear the eater say "well done" (and there is special satisfaction in both eating and baking when one has successfully baked and then eaten blissfully the cookie of his or own making). Reading and writing are so related. One reads best with a sense of writer; and one writes best with a sense of reader.

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Instructional Scaffolding: Reading and Writing as Natural Language Activities

Discussions of how to teach reading or writing skills have usually focussed on specific skills assumed to be important components of adult performance. This perspective has led to extensive taxonomies of questioning techniques, to legions of workbook and textbook activities providing "practice" in one or another component skill, and to outlines of ideal lesson sequences focussed around such categories as motivation, introduction of new concepts, practice, and application.

We will argue here for a different focus in planning and analyzing instruction in reading and writing. Rather than extensive analysis of component skills, we wish to focus on the language task to be carried out by the student, and the instructional support, or "scaffolding" (Bruner 1978; Cazden 1980), that is needed in order to carry the task through successfully. In this model, the novice reader or writer learns new skills in contexts where more skilled language users provide the support necessary to carry through unfamiliar tasks. In the course of this process, the structure provided by the skilled reader or writer is gradually internalized by the novice, who thus eventually learns to carry through similar tasks independently.

This model of learning to read and write is based on recent studies of how young children first learn the complex patterns that structure spoken language. Michael Halliday (1975), for example, has provided some interesting analyses of how his son Nigel developed complex structures for organizing and describing events. One example which Halliday presents occurred after a visit to the zoo. During the visit, Nigel and his father had watched a goat try to eat a plastic garbage can lid, and had seen the zookeeper intervene to take the lid away. The incident obviously made an impact on Nigel, who returned to the topic later in the day:

Nigel: try eat lid
Father: What tried to eat the lid?

Nigel: try eat lid
Father: What tried to eat the lid?
Nigel: goat . . . man said no . . . goat try to eat lid . . . man said no

Then, after a further interval, while being put to bed:

Nigel: goat try eat lid . . . man said no
Mother: Why did the man say no?
Nigel: goat shouldn't eat lid . . . (shaking head) good for it
Mother: The goat shouldn't eat the lid; it's not good for it.
Nigel: goat try eat lid . . . man said no . . . goat shouldn't eat lid . . . (shaking head) good for it

The story is then repeated as a whole, verbatim, at frequent intervals over the next few months (p. 112).

This example is an excellent illustration of the ways in which a more skilled language user provides a scaffold that allows a novice to carry out a more complex task. Nigel's parents are building on his already-developed skills in dialogue to enable him to develop and maintain a brief narrative. Several aspects of their interaction are particularly important for our purposes, providing a model for examining language learning in school contexts:

1. The parents' questions are embedded in the child's attempt to complete a task which he has undertaken but cannot complete successfully on his own; Nigel responds well to the questions because they serve his own intentions.
2. The questions are structured around an implicit model of appropriate structure for a narrative; they solicit information which will make the child's narrative more complete and better formed.
3. At times, the parents directly model appropriate forms that Nigel is in the process of mastering, recasting or expanding upon the child's efforts without "correcting" or rejecting what he has accomplished on his own.
4. Over time, the patterns provided by the parents' questions and models are internalized by the child, and are used without external scaffolding in new contexts. In turn, the scaffolding the parents provide can be oriented toward the next steps in Nigel's growth as a language user.

School learning can also be studied as a series of problems to be solved in a context where new strategies and skills are learned in interaction with others. When direct interaction with an individual student is not possible or appropriate, much of the scaffolding has to be provided in more public, less individual forms—through the structure of the lessons, the framing of exercise and textbook material, and the focus of the teacher's comments and discussion. Thus "instructional scaffolding" can occur in two ways, either in direct interaction with individual students or in group-oriented instruction. Teachers approaching instruction from this perspective must a) determine the difficulties that a new task is likely to pose for particular students, b) select strategies that can be used to overcome the specific difficulties anticipated, and c) structure the activity as a whole to make those strategies explicit (through questioning and modelling) at appropriate places in the task sequence.

The scaffolding provided allows the novice to carry out new tasks while learning strategies and patterns that will eventually make it possible to carry out similar tasks without external support. Although we have not usually thought of the teacher's role in this way, in fact scaffolding can be a powerful analytic tool in examining

what teachers do to help students learn to read and write. The concept of scaffolding is as relevant to students' initial encounters with written language as to their later struggles to master the more complex forms peculiar to particular subject areas (e.g., book reports, lab reports, themes).

If we generalize the natural language learning processes described by Halliday (1975) and others, we can derive a set of criteria for judging the appropriateness of the instructional scaffolding which teachers provide for particular school tasks. These criteria emphasize five aspects of natural language learning: intentionality, appropriateness, structure, collaboration, and internalization:

1. Intentionality: The task has a clear overall purpose driving any separate activity that may contribute to the whole. Eventual evaluation of students' success can be cast in terms of what they intended to accomplish.
2. Appropriateness: Instructional tasks pose problems that can be solved with help but which students could not successfully complete on their own. The most appropriate tasks will be those that involve abilities that have not yet matured but are in the process of maturation, or in Vygotsky's (1962) terms, abilities that are not so much "ripe" as "ripening."
3. Structure: Modelling and questioning activities are structured around a model of appropriate approaches to the task and lead to a natural sequence of thought and language.
4. Collaboration: The teacher's response to student work recasts and expands upon the students' efforts without rejecting what they have accomplished on their own. The teacher's primary role is collaborative rather than evaluative.
5. Internalization: External scaffolding for the activity is gradually withdrawn as the patterns are internalized by the students.

What Students Do in School

If we use the notion of scaffolding as a way to conceptualize school tasks, many current practices do not fare particularly well. Rather than helping students carry out more complex reading and writing activities, our instructional apparatus either ignores the problems posed by the new task, or adds new and irrelevant steps along the way. These steps generally segment the task in ways that require students to deal with small bits (e.g., definitions of words, statement of the main idea) in isolation from broader concepts. The following excerpt from a study guide developed for a sixth grade unit on energy is typical of many reading/writing activities:

> From page 18:
> 1. _____ is the basic renewable energy source.
> 2. YES NO Are solar energy collectors a new idea?
> 3. Why is the idea of using solar energy coming back?
>
> _____
>
> 4. _____% of the energy used in this country is used to produce _____ heat to warm _____ and heat _____

Such activities focus attention on isolated or fragmented aspects of knowledge rather than engaging students in purposeful tasks through which they could learn to deal with both new content and the patterns of argument and evidence they will need as they read and write in their subject classes.

Classroom approaches to writing instruction have been described in a number of recent studies (Applebee 1981; Graves 1978; Petty and Finn 1981). Though we

will examine some examples of better practice in a moment, most student writing about new learning takes one of two forms: 1) essay questions designed to test whether students have learned material covered in textbooks or class discussions, or 2) highly structured exercise material in which important concepts or new skills are highlighted in multiple-choice, fill-in-the-blank, or similarly restricted formats.

If we examine these two approaches as examples of scaffolding, we find that they represent opposite extremes. The typical essay question assumes that no support should be provided: the students' task is to recite material which they have already mastered rather than to explore new and more difficult forms. As an assessment device such questions have their place, but as the locus of instruction they are clearly inadequate. The "scaffolding" provided in the typical practice exercise, on the other hand, is all-pervasive. The exercise material usually takes over all of the problems inherent in structuring text, leaving the student to do little more than slot in whatever information is missing. Rather than being helped to complete tasks more complex than they would otherwise be able to carry through, students find themselves completing exercises simpler than what they would ordinarily do on their own. They are required to fill in "school language"—bits of information related to the concepts the teacher wants the students to learn. There is neither the need nor the opportunity for the students to reflect on new ideas, to integrate or apply them in new ways, or to make them their own. That they are often bored and frustrated seems hardly surprising.

Classroom approaches to reading instruction are very similar. In her recent study of comprehension instruction, for example, Durkin (1978-79) found that virtually all of the comprehension activities in middle grade classrooms tested students' comprehension of what they had read, rather than providing strategies or skills for approaching more complex reading materials. The brief excerpt from the study guide on energy, quoted above, is typical of what Durkin found. Rather than helping students deal with new material, the activities are designed to test recall of isolated facts from students' texts.

An alternative model was suggested in a recent report from the National Assessment of Educational Progress (1981). Rather than testing comprehension, the NAEP report suggested that effective comprehension activities would build upon students' initial interpretations through writing or discussion activities which confront readers with alternative views. In defending their initial judgments and reconciling opposing arguments, readers would progress toward a fuller understanding—and to reinterpretation where necessary. Unfortunately, results from the National Assessment suggest such approaches are rarely used in American schools.

Some Positive Examples

Studies of "typical" approaches obscure the many interesting activities that fill the classrooms of our best teachers. In these classrooms, teachers use many different forms of instructional scaffolding to support students' attempts at more difficult language and thinking tasks. Many of these activities are quite traditional, providing prereading or prewriting activities, "guides" to structure comprehension or

writing, and discussion or revision sessions to expand upon and develop students' initial work. The particular way the activities will be framed depends upon the particular subject area and the skills that the students bring to the task. The examples that follow, drawn from the science lessons of teachers trying to develop more effective approaches as part of a district curriculum development project, will illustrate how the notion of instructional scaffolding can help us analyze and better understand the activities we develop for our students.

Example One

The first example comes from a fourth grade class studying the concept of convection in a larger unit on weather. As part of the lesson, students were guided through a simple experiment demonstrating the effects of convection. At this point in the year, both the concepts involved and the conventional "pattern" of a science experiment were new to the students. To help them with the task, the teacher discussed the steps while they were being carried through in class, and provided a worksheet with the following questions:

1. Complete the following sentence: I think the winds are caused by . . .

   Hot versus Cold. You will be given directions for an activity using hot and cold water. Follow these directions carefully and then complete the following:
2. Describe what you did. (PROCEDURE)
3. Complete the picture of the jar on the right to show what happened. Describe what happened below. (OBSERVATIONS)
4. CONCLUSIONS—We will do together.
   What word describes what has been happening in the jars with hot and cold water?

If we examine this activity in the light of our criteria for effective scaffolding, we can see both strengths and weaknesses. First, the activity clearly meets the criteria of intentionality and appropriateness. It involves a purposeful language task and builds on the students' knowledge toward a new form that is more complex than they could complete successfully on their own.

Because the lab report format is new, and the students' initial efforts are still quite awkward. Ellie's description of the procedures she followed parallels those of others in the class. Unfamiliar with the form, she draws heavily upon her knowledge of how to give instructions (and the language of the teacher in discussing what to do) to complete this part of the task:

> Take the cup of frozen green water and remove the tape. Dip it in a bottle of hot water. Watch what happened to the cold water.

As Ellie and her classmates become more familiar with the lab report form, their descriptions of lab procedures will rely less on their teacher's language and more on their own.

The fit between the activities suggested and an overall model of appropriate approaches to the task (our criterion of structure) is somewhat less comfortable. The three middle questions on the worksheet model an appropriate organizational format for a lab report and successfully segment the task. Students can complete each section separately yet end up with a final report structured around "Procedures," "Observations," and "Conclusions." Because the students are so unfamiliar with

this format, the teacher in this case uses class discussion to provide further support for the final section (conclusions), rather than leaving the students to complete the task on their own. It would have rounded out the activity more fully, however, if the teacher had then asked the students to write up the conclusions, in their own words, as a last section to their lab reports.

The first and last questions on the worksheet are somewhat out of place in the overall activity. The final question is reminiscent of restricted comprehension questions, reminding students to remember definitions of key words without requiring an understanding of the underlying concept. While the vocabulary being emphasized is certainly appropriate, it has been tagged on at the end rather than integrated into the task as a whole.

The role of the opening question is less clear. It may be intended as a kind of "topic sentence" for the lab report, or as a prewriting activity to orient students before they begin to write. The format adopted, however, defeats either of these purposes, drawing attention away from the problem to be addressed in the experiment, toward a restatement of concepts drawn from the teacher's earlier presentation. Ellie responded in kind, with a tightly packed "school response": "I think the winds are caused by high pressure and low pressure and convection." This answer is technically correct, but there is no indication that Ellie understands the implications of "convection" for winds and weather.

The opening question in a followup experiment developed by the same teacher provides an interesting contrast. It begins: "What are you trying to find out in the next activity? (PURPOSE)." Here the students' attention is focussed forward toward the activity, and the question is integrated into the lab report as a statement of purpose. This time, Ellie responded with her own words instead of echoing the teacher's: "What would happen if you put hot water into cold water."

From the assignment itself, we cannot judge whether the teacher adopts a collaborative role in responding to the students' work or whether the scaffolding provided is withdrawn as the students internalize the underlying structures.

Example Two

The second example comes from a fifth grade class which had been studying about states of matter. Students in this class were familiar with the patterns of science experiments and with lab report formats. The teacher could therefore rely upon students' knowledge of these forms rather than building those patterns into the structure of the lesson. In this case, the students carried out the experiment with teacher guidance. She then put the words PROCEDURES and OUTCOMES on the board and reminded the class to use these as headings for their reports.

Mark's report is similar in quality to those of his classmates; it is incomplete and represents an awkward mix of his own language and the instructions given by the teacher as the lesson progressed:

> I. Procedure—First take 2 Ice cubes out of the freezer and put them in a pot while they are solid. Put them on a hot burner.
> II. Outcome—The ice turned from solid to liquid. Now put the lid on the pot for 2 min. Take off the lid and quickly turn it over fast. Look at the lid it is all wet with

> water because when you put the lid on you trapped the steam on the top. It will turn back in to solid if you put it in the freezer.

Again, this task meets our criteria of intentionality and appropriateness. The students have as their overall purpose a presentation of the experiment—what they did and what happened as a result. At the same time, their performance on the two-part writing task suggests that the activity does extend beyond what the students can successfully complete on their own. Mark knows that lab reports are made up of discrete sections, that two of these are Procedures and Outcomes, and that that writing of these sections can be approached as a series of one-paragraph tasks.

For the Procedures section, Mark has used his own words. However, like Ellie in the first example, he has turned his own experiences into directions for someone else to carry out. He does not yet understand that a lab report requires him to recount his own actions. Further, his presentation is incomplete, particularly in his confusing second paragraph. In the Outcomes section, Mark skips from the first outcome back to the successive procedures he followed—and continues to change voice from experimenter/narrator to teacher/instruction giver. In his last two sentences, Mark recognizes the need to formulate some conclusions, although he is somewhat awkward about it.

Although her removal of other forms of scaffolding was appropriate, this teacher has not complied with our criterion of "collaboration" rather than evaluation in response to students' early efforts. Her comment on Mark's paper—"good"—was typical of her responses, although Mark and his classmates clearly needed further support in recasting and expanding their first attempts to find an appropriate form for their reports.

Example Three

Our final example comes from an eighth grade class which had been studying about electricity and how electric tools and appliances work. After conducting a series of electrical experiments, the students were told to select a tool or appliance, to examine how it worked, and then to write a report about it. To help them visualize the placement of the parts they would refer to in their reports, the students were told to begin the report with a diagram. While this task as a whole complies with our criteria of intentionality, appropriateness, and structure, the writing produced by the students suggests that more scaffolding activities were needed if they were to complete the task successfully.

Jeff's paper is similar to many others in that it is driven by his personal experience in completing the task rather than by a sense of appropriate expository structure.

> Electric Knife
>
> Once you plug in the electric knife you push down on the switch to make the electrical connection which make the motor run which turn the worm gear which turns the circular gear which makes the knife go back and forth—see diagram

Although Jeff's information appears to be technically correct, he does not follow a report format, but rather blurts out his observations using the narrative form with

which he is more familiar. While Jeff uses some of his knowledge of reports, this clearly is insufficient. There is no introduction or general statement of purpose. There is no elaboration, and there is no conclusion. The drawing of the diagram seems to have solved one of the problems that the teacher anticipated; it led Jeff to focus (appropriately) on the internal structure of the electric knife, rather than on its typical uses. As is clear from Jeff's paper, however, he also needed support in structuring the language of the report. Although this could have been provided in the teacher's responses to Jeff's work, in this instance the teacher's comments were evaluative rather than collaborative. For the most part they focussed on the bits of information Jeff omitted (and which lowered his grade) rather than helping him present his findings in a more appropriate way.

Conclusions

The examples we have discussed were selected to illustrate the kinds of instructional scaffolding that can be provided within one area of the curriculum; each led students through the thinking and language tasks involved in school science experiments. The framework we have used to discuss these tasks, however, is generalizable; it can be appropriately applied to reading, writing, or discussion activities in any area of the curriculum. The particular skills which will need instructional support will vary from grade to grade and subject to subject, but effective activities will meet our five criteria of intentionality, appropriateness, structure, collaboration, and internalization. Rather than separating students' learning of subject-area content from their developing thinking and language skills, such activities integrate new learning with ways in which students express their knowledge. The processes of learning to read and to write become intertwined in mutually supportive natural language activities.

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A Writing Approach to Reading Comprehension—Schema Theory in Action

In the elementary school, many lessons designed to develop children's reading skills have their origins in basal-reader materials. In addition, some lessons have their beginnings in firsthand experiences. Working from a common experience, children dictate sentences that the teacher records; later they read what they have composed.

The almost exclusive reliance on basal readers and experience charts for teaching reading skills has an unfortunate outcome. Because stories and poems predominate in basal reading books and because expository pieces, when included in these texts, often lack the main and subheads that characterize conceptual and relational content, young readers have little opportunity to develop an understanding of how expository prose is structured. Expressed in more technical terms, they have little opportunity to refine the schemata they hold in their minds as to how conceptual and relational content is organized on paper and thus to build the skills necessary to comprehend lengthy or complex passages.

Even when children draft story charts together and they use these to build reading skills, the content young writers compose is typically stories, poems, and paragraphs that describe personal experiences. This is equally true when elementary youngsters write independently; stress is on drafting stories, poems, and descriptions of firsthand experiences. Only infrequently do children compose on relational topics from science and social studies. As a result, students have little opportunity to develop their ability to organize expository content on paper. Yet this learning is basic, for it relates to reading as well as to writing. In learning to organize informational content for writing, students gain insight into how authors handle complex ideas on paper; in so doing, they are refining their schemata for comprehending this kind of content.

This lack of attention to building schemata for interpreting and composing informational content seems to occur even though study in science and social studies is part of elementary programs and children read from content area texts as early as first grade. An analysis of the teacher's guides to science and social studies texts hints at the reason for this lack. Few series suggest ways to encourage young learners to perceive the structure within which ideas are organized in a chapter, to gather data systematically based on their comprehension of that structure, and to organize points gleaned into an original structure for writing.

On the other hand, once a teacher decides to help children gain an understanding of the structures through which informational content tends to be expressed and an ability to use these structures as they read and write, designing lessons to achieve these ends is not difficult. Available for this purpose are a series of teaching/learning strategies that, when used in conjunction with one another, have the potential to clarify the organization of informational content. These strategies include:

1. Factstorming;
2. Categorizing facts stormed into related groups;
3. Collaborative drafting of paragraphs based on groups of interrelated facts;
4. Sequencing paragraphs into an interrelated whole;
5. Drafting introductions and conclusions;
6. Organizing the parts into a cohesive report replete with headings, introductions, and concluding sections;
7. Interpreting similar pieces of discourse;
8. Summarizing, synthesizing, and judging—writing.

The remainder of this paper describes this sequence of instructional strategies—a sequence in which oral interaction leads into writing and writing in turn helps students build schemata for comprehending textual material they read.

Factstorming

A basic strategy for introducing students to the structures through which informational content is expressed in written form is factstorming. Factstorming is the process in which students randomly call out phrases that come to mind on a topic while scribes record these on chart paper or the chalkboard in the order given. To be productive, of course, factstorming must be based on a data-gathering activity. For example, students may view a film or filmstrip or listen to an informational passage shared orally by their teacher. They may gather information through interviewing or through a field trip. They may read in several references on the topic. Or they may collect data through a combination of approaches that are part of unit study. In any event, students must have informational background to bring to the factstorming.

Categorizing Facts

The next strategy in the instructional sequence is categorization, or the systematic organization of facts "stormed." This can be achieved in several ways, depending on the sophistication and previous experience of students with the process. One way is for the teacher to select an item of information laid out on the board and ask students to locate a second item that is in some way like the first. Students tell how the two items are related, circle them, and locate other items that share the same relationship, circling them in the same manner. Having developed one cohesive category of facts in this way, students proceed to organize the remaining facts into other categories according to shared relationships, indicating related items by circling them with different colored markers.

For example, if youngsters are completing a unit on environmental pollution or have viewed a filmstrip on this topic, they begin by factstorming words and phrases related to the pollution. Then they categorize facts given, perhaps grouping together such items as automobile exhaust, forest fires, smoke stacks, burning sulphur coal, and so forth because these relate to air pollution. They circle these items with a yellow marker. In like manner, they circle with blue such items as chemicals, human wastes, and trash because these are forms of water pollution. Through analyzing in this way, young thinkers can develop a series of informational categories related to the larger topic of environmental pollution.

Dittoed lists of terms and points "stormed" are helpful when students have had little experience categorizing. Youngsters factstorm one day, perhaps listing on a chart points recalled from an informational film viewed or from a series of paragraphs read. These points are reproduced on a ditto, so that each youngster the next day has a copy and can circle related points on it with different colored crayons.

With some kinds of informational content, a data-retrieval chart can facilitate children's perception of relationships. In one class, for example, students listened as their teacher, Maxine Owens, read a short selection on Thanksgiving; then they brainstormed points about Thanksgiving that they remembered from the passage and that they recalled from previous discussions. The teacher recorded all the items given even though some had no relationship to Thanksgiving. Their list included these terms:

feast	Sarah	cabins	deer
turkey	Hope	pumpkin	Mayflower
fish	cabin	stuffing	Plymouth
corn	loft	cranberries	Plymouth rock
longhouses	Pilgrims	Samoset	long dresses
moccasins	Indians	Abe Lincoln	pants
John	harvest	George Washington	skins
Squanto	fall	pie	furs

The teacher then pointed to one item of information—cabins. "How were these used?" Ms. Owens asked. Students responded by talking about how the Pilgrims lived in them. "What item on our list gives us information about Indian homes?" she then asked. Students responded by describing longhouses.

Ms. Owens at that point began a chart. She recorded:

HOMES

1. Indians longhouses
2. Pilgrims cabins

Having recorded, she pointed to the word *moccasins* on the list and asked, "Where on our chart should I write down this word?" Students in this third grade were quick to see that although moccasins "belonged" to Indians, "moccasins" were not a home. They cooperatively decided that their chart needed another column, one labelled "CLOTHES." In this column next to Indians, they listed animal skins, furs, feathers, and moccasins, for these items represented the clothing of the Indians living in that part of Massachusetts. In the same column next to Pilgrims, they listed long dresses, pants, hats, knickers, and shirts.

At that point, Ms. Owens drew students' attention to the word on their original list, *pie*. "In which column and row of the chart does this belong?" she asked. Students again saw the need for another column, this one labeled "FOOD." Items such as turkey and cranberries they placed next to both Pilgrims and Indians. They categorized pie as a Pilgrim food.

Having framed out their chart, they went back to their factstormed list to see if they had overlooked items that they could include. They were able to add names such as Samoset and John to the chart, but they decided to eliminate all together items that did not relate to the topic. In this way, they crossed out Abe Lincoln and George Washington. Their completed chart appears as Figure 1.

Although Maxine Owens began the data chart that her students used to organize points, through discussion she involved her third graders in its development. Some first and second grade teachers, however, prefer at first to provide the categories for organizing data at the point when children begin to factstorm. They may suggest, for example, "Boys and girls, tell me as many things as you can about what fire fighters do." On a chart labeled "What Fire Fighters Do" these teachers record the suggested items. Next they may ask for items that name things that a fire fighter uses to fight fires. They record these items on a second chart with that label. Students and teacher together create other charts labeled "Why People Become Fire Fighters," "What Fire Fighters Wear," and so forth. The result is a series of labeled lists, each organized around one main idea.

Figue 1

A Data Chart Used to Organize and Relate Facts

	HOMES	*CLOTHES*	*FOOD*
1. Indians Squanto Samoset	longhouses	animal skins, feathers, furs, moccasins	fish, corn, deer, turkey, squash, cranberries
2. Pilgrims John, Hope, Sarah	cabins, loft	long dresses, pants, hats, knickers, shirts	salt pork, bread, turkey, squash, cranberries, corn, pie

Drafting Cohesive Paragraphs

Once students have grouped related points into labeled categories, they can take the next step—drafting short paragraphs based on each of the categories. Again there are several ways of proceeding. With youngsters who have had little experience drafting informational paragraphs based on one main idea, a good introductory strategy is teacher-guided group writing. Guiding either the total class or a small writing team, the teacher focuses attention on one category of information previously charted and encourages children to compose sentences on this topic. The teacher or a student scribe records sentences suggested and then guides the students in revising what they have drafted. The teacher may also ask students for a general statement to use as a summary at the beginning or end of the paragraph—a topic sentence, so to speak. He or she may ask students to reorder the sentences drafted so that they flow more logically, to combine two sentences into one, to substitute a more expressive word for one used, to write another sentence that supplies added information. In short, children and teacher together mark over, cross out, insert, reorder, and finally title their paragraph.

Now in small writing teams, students work in the same way with other categories of information they have charted. If each group drafts a paragraph on a different subtopic, the result is several titled paragraphs, each on a main idea that relates to a broader area.

With sophisticated students who have had considerable experience composing informational paragraphs based on categorized lists or data charts, of course the teacher can offer the option of individual writing. Each youngster composes a titled paragraph on one category of information. Later those who have drafted paragraphs on the same category can pair off to talk about how they organized the given points into paragraphs and to help with the editing of each other's papers.

Sequencing Paragraphs into a Logical Whole

Having drafted and edited paragraphs, students can share them by recording copies on a chart or the chalkboard. Now the task is to decide on the order in which the individual paragraphs can be combined into a composite report. Students reach a consensus by talking about possible orders and the advantages and disadvantages of each.

Drafting Introductions and Conclusions

After students have sequenced their collaborative report, they can talk out the content of an introductory paragraph, cooperatively frame a beginning sentence, and dictate several supporting sentences that can be part of the introduction to their report. Again, this work can be handled as a teacher-guided group writing activity; the teacher asks questions that encourage students to think of a good beginning sentence and to identify key content that is to follow in the body of the report. In the same way, students can formulate either a summary paragraph or one that proposes generalizations based on the content included in the report.

Organizing the Parts into a Cohesive Report

Once students have drafted an introductory paragraph, decided on an order for the paragraphs they have composed, and drafted a concluding section, a group of three compositors goes to work. Their task is to put together a final draft of the class report, replete with subheads based on the titles given by writing groups to the individual paragraphs. Their work is eased if the class has gone back to edit all the paragraph titles so that they have a uniform structure. This editorial work in elementary grades must be teacher guided; the teacher must raise questions that help children define the main idea of each subpart.

Interpreting Similar Pieces of Discourse

An instructional sequence that includes factstorming, categorizing, paragraph drafting, paragraph sequencing, developing introductory and summary paragraphs, and organizing paragraphs into a structured whole helps students build an overall understanding of the structure of informational content. This understanding serves as a mental map for interpreting informational content they read.

To help children apply their schemata in reading, the teacher can encourage young writers to study informational paragraphs to find the same structures they themselves have been using in their own writing. Questions appropriate at this point include:

1. What are the big categories of information with which this writer is dealing? How do we know?
2. What system of heads and subheads is this writer using? What does the system of heads and subheads tell us about the way the topic will be developed in this section?
3. What is the main—or most important—topic of the section? How do we know?
4. What kind of information has the writer put into the introduction to the section? What clues have been given in the introduction as to the organization of the material to follow?
5. What kind of information has the writer put into the concluding section? Are any clues given as to the most important points included in the section?

To aid children's interpretation of the structure of informational passages, teachers should choose content texts that have been organized with heads and subheads and include well structured introductory and summary sections within each chapter. Unless these reading aids are an integral part of texts starting in fourth or fifth grade, students are ill-prepared to handle the complex texts with which they are faced in high school science and social studies. This is especially true since junior and senior high school content specialists are rather unlikely to spend time teaching reading skills.

Once students have identified the categories of information with which an author is dealing and have identified the organizing structures that he or she is

using to develop these categories, students can use their understanding to extract what is important in a section of the text. Here again, a strategy learned in writing content can be applied to the interpretation of it—the data chart. Studying a section of their social studies text, for example, sixth graders can devise a data chart on which to record key pieces of information. Working in small task groups or individually, they extract data from their texts to complete a chart such as the one in Figure 2. Teachers do not provide students with this type of chart; rather students, guided by their teacher, analyze the introductory matter, the system of heads and subheads, and the concluding paragraphs to identify the labels to place on the rows and columns of their data chart.

Later when students discuss the ideas from a section of text read, they keep their data charts in view, using points recorded there to jog their memories. This takes the pressure off memorizing details and demonstrates the importance of assembling a set of organized notes.

Summarizing, Synthesizing, and Judging—Writing

Later still, after students have talked about the basic points developed in a section of text read, they can expand their data charts to include writing tasks that require the drafting of paragraphs about ideas read and discussed. These tasks can be factual, in which case the writing act not only builds writing skills but also reinforces

Figure 2

A Chart for Summarizing Data

	THE MONARCHIES OF EUROPE IN THE 1600s and 1700s				
	The Sun King	The Habsburgs	Brandenburg-Prussia	The Romanovs	The Stuarts
Country					
Time period					
Key kings and queens of the period					
Good things done by this royal house					
Bad things done by this royal house					

Note: This chart was based on a section of the sixth grade text *The Human Adventure*, which is part of the Addison-Wesley social studies program.

understanding of key points. In the case of the data chart in Figure 2, writing tasks might include these:

1. Write one paragraph that sets forth key points about the Sun King. In this instance, start your paragraph with a topic sentence that gives an overview.
2. Write one paragraph that describes the Habsburg monarchs.
3. Write a paragraph that describes key characteristics of the monarchs of Brandenburg-Prussia. Try to construct your paragraph so that your topic sentence comes at the end.

The tasks might go beyond fundamental facts and concepts to require a synthesis:

1. Write a paragraph that explains how these monarchies were similar to one another.
2. Write a paragraph that explains how these monarchies were different from one another.

The tasks might also require judgmental thinking:

1. Write a paragraph or two telling under which monarchy you would have preferred to live if you were living during the 1600s and 1700s. Remember to tell why.

Having drafted and edited their paragraphs either individually or cooperatively, sixth graders can decide on headings that identify the overarching topic of each paragraph or each related series of paragraphs they have written. They use these headings to organize their paragraphs into a summary report in which ideas flow logically from one section to the next and in which paragraphs focus on one major topic. In so doing, they are refining their understanding of the structures through which informational content is organized in its written form—an understanding that is important in both reading and writing.

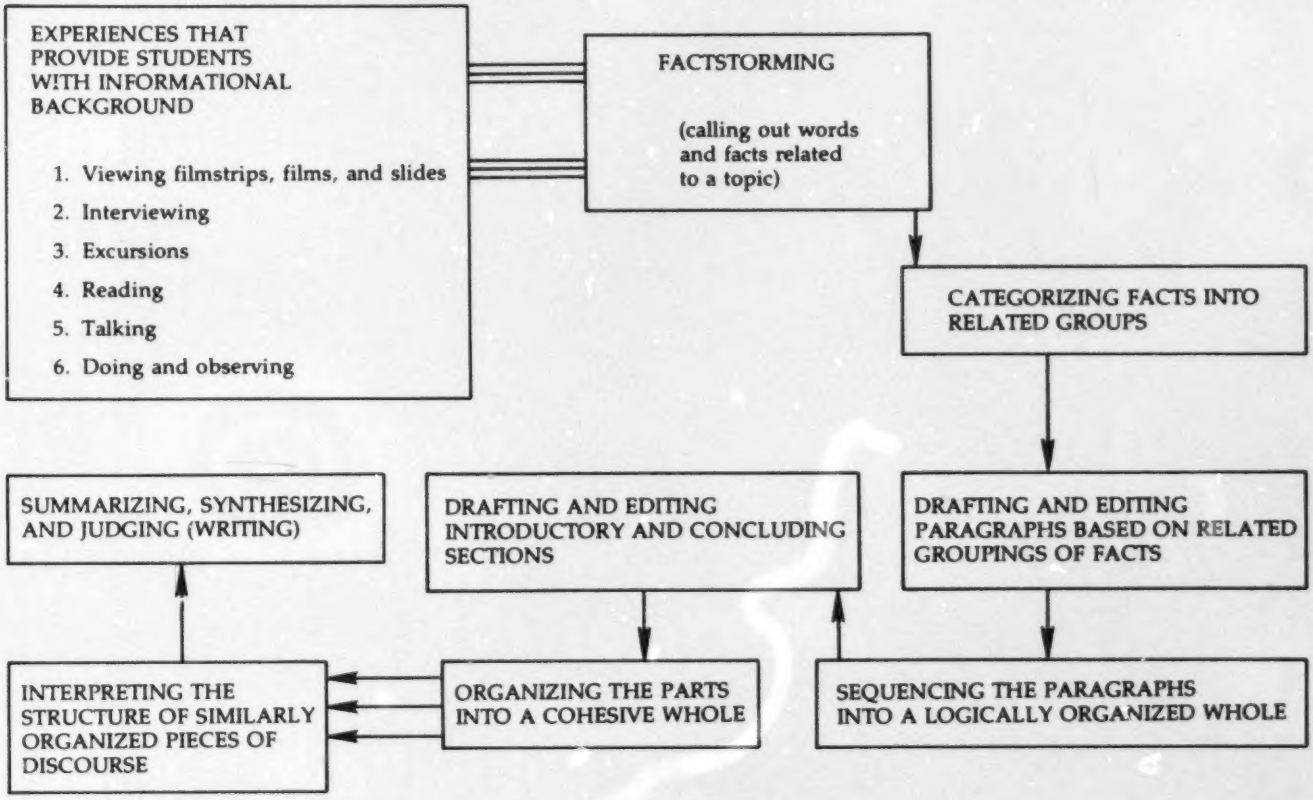
Summary and Conclusions

Schema theory holds that the understandings a child brings to the reading of a selection are as important to comprehension as are the actual words of the written text. The child, or any reader for that matter, has a fund of knowledge through which he or she filters messages. This knowledge is stored as cognitive frameworks that learning theorists call schemata. Schemata include conceptions of how written content is structured as well as general understanding of a topic.

Since informational content has as definitive a structure as does story content, it is reasonable to suggest that a student's schemata for the organization of informational content determine comprehension of a particular passage just as a student's schemata for the way stories pattern determine comprehension of a particular story. As this paper has suggested, one way to introduce students to the structures through which ideas are organized in written form is through an instructional sequence in which writing is a key component. In this sequence (see Figure 3), students move from being constructors of content to interpreters of it. Through factstorming, categorizing of facts stormed, drafting paragraphs that focus on one category of fact, sequencing paragraphs, drafting introductions and conclusions, and organizing the parts into a cohesive report, students develop an understanding of how informational content is structured. They bring this understanding to bear

Figure 3

A Sequence of Instructional Strategies for Building Understanding of How Informational Content Is Structured


EXPERIENCES THAT PROVIDE STUDENTS WITH INFORMATIONAL BACKGROUND
1. Viewing filmstrips, films, and slides
2. Interviewing
3. Excursions
4. Reading
5. Talking
6. Doing and observing
FACTSTORMING
(calling out words and facts related to a topic)
CATEGORIZING FACTS INTO RELATED GROUPS
DRAFTING AND EDITING PARAGRAPHS BASED ON RELATED GROUPINGS OF FACTS
DRAFTING AND EDITING INTRODUCTORY AND CONCLUDING SECTIONS
SUMMARIZING, SYNTHESIZING, AND JUDGING (WRITING)
SEQUENCING THE PARAGRAPHS INTO A LOGICALLY ORGANIZED WHOLE
ORGANIZING THE PARTS INTO A COHESIVE WHOLE
INTERPRETING THE STRUCTURE OF SIMILARLY ORGANIZED PIECES OF DISCOURSE

as they figure out the organization of passages they read and as they attempt to comprehend what the author of a selection is trying to communicate.

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